

FURNITURE & CABINET MAKER

COMPETENCY BASED CURRICULUM

(Duration: 2 Yrs.)

APPRENTICESHIP TRAINING SCHEME (ATS)

NSQF LEVEL- 5



SECTOR – CONSTRUCTION



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

FURNITURE & CABINET MAKER

(Revised in 2018)

APPRENTICESHIP TRAINING SCHEME (ATS)



NSQF LEVEL - 5

Skill India
कौशल भारत - कुशल भारत

Developed By

Ministry of Skill Development and Entrepreneurship
Directorate General of Training
CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE
EN-81, Sector-V, Salt Lake City,
Kolkata – 700 091

ACKNOWLEDGEMENT

The DGT sincerely expresses appreciation for the contribution of the Industry, State Directorate, Trade Experts and all others who contributed in revising the curriculum. Special acknowledgement to the following industries/organizations who have contributed valuable inputs in revising the curricula through their expert members:

Special acknowledgement is extended by DGT to the following expert members who had contributed immensely in this curriculum.

Sl. No.	Name & Designation Sh./Mr./Ms.	Organization	Expert Group Designation
1.	S.K. Gupta, Regional Director	Regional Directorate of Apprenticeship Training, Faridabad.	Chairman
2.	S. Mewa Singh, Deputy Apprenticeship Adviser	Directorate of Training & Technical Education (Punjab), Chandigarh.	Member
3.	D.P. Sabharwal Deputy Director	DGE&T., Ministry of Labour, S.S Bhawan, New Delhi.	Member
4.	Shri J.R. Choudhury Training Officer	Regional Directorate of Apprenticeship Training, Faridabad.	Member
5.	Shri M.S. Parmar, Principal	Mehar Chand Industrial Training Centre, Jalandhar	Member
6.	M.P. Gupta, Kline Engineer	Government Wood Seasoning Plow, Kartarpur, Jalandhar	Member
7.	Shiv Dev Singh, Principal	Industrial Training Institute, Chandigarh	Member
8.	Harjit Singh, W.S. Superintendent	Mehar Chand Polytechnic Jalandhar	Special Invitees
9.	I.M. Bhatti, Instructor	Mehar Chand Polytechnic Jalandhar	Special Invitees
10.	Balwinder Singh, Carpenter Instructor	Daya Nand Junior Technical School, Jalandhar	Special Invitees
11.	Balwinder Singh, Carpenter Instructor	Daya Nand Junior Technical School, Jalandhar	Special Invitees
12.	Jaspal Singh, Lecturer, Furniture making	Govt. Senior Secondary School, Kartarpur	Special Invitees

Sl. No.	Topics	Page No.
1.	Background	1-2
2.	Training System	3-7
3.	Job Role	8
4.	NSQF Level Compliance	9
5.	General Information	10
6.	Learning Outcome	11-13
7.	Learning Outcome with Assessment Criteria	14-17
8.	Syllabus	18-21
9.	Syllabus - Core Skill	22-29
	9.1 Core Skill – Workshop Calculation & Science and Engineering Drawing	
	9.2 Core Skill – Employability Skill	
10.	Details of Competencies (On-Job Training)	30-31
11.	List of Trade Tools & Equipment Basic Training - Annexure I	32-37
12.	Format for Internal Assessment -Annexure II	38

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.



Skill India
कौशल भारत - कुशल भारत

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.

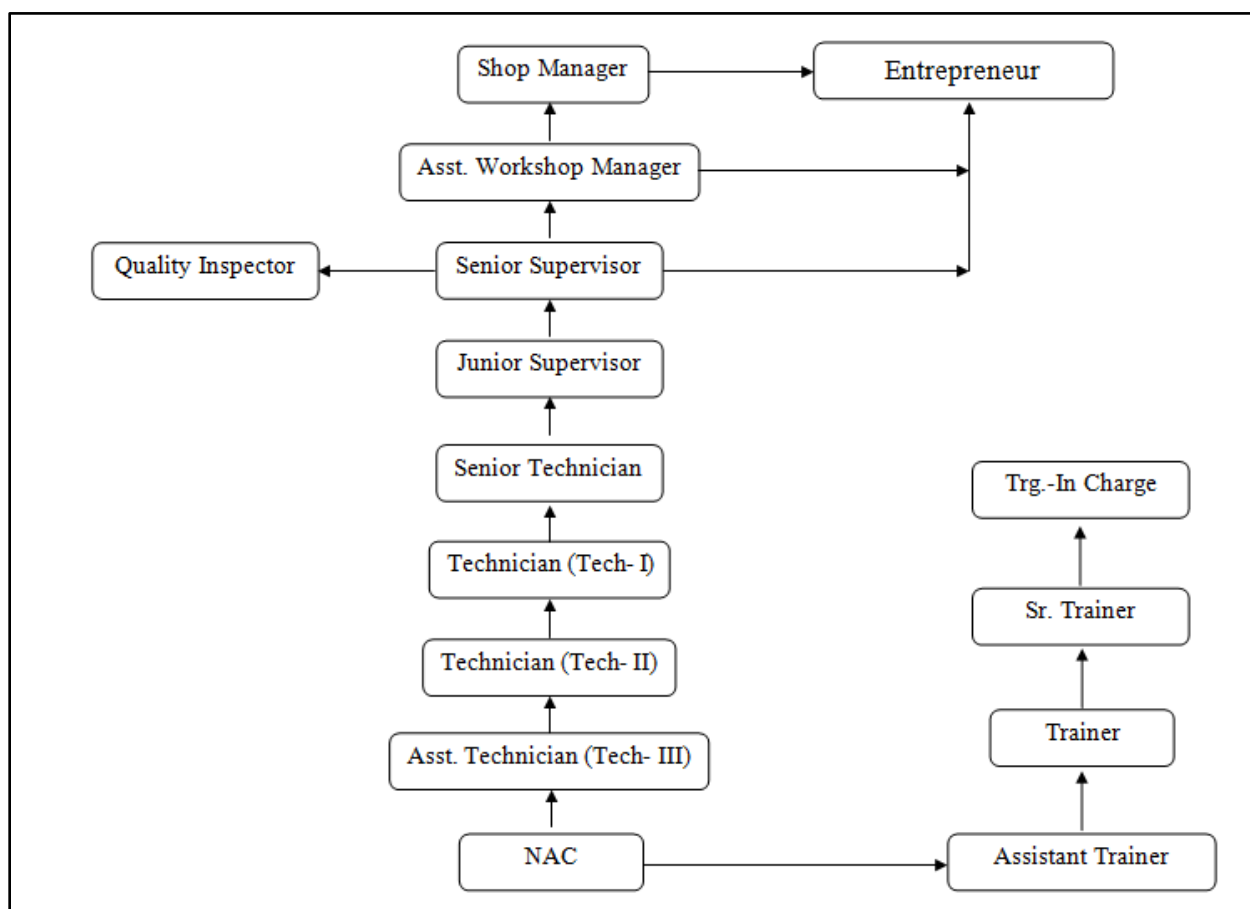
Furniture and Cabinet Maker trade under ATS is one of the most popular courses delivered nationwide through Electricity Boards. The course is of two years (02 Blocks) duration. It mainly consists of Domain area and Core area. In the Domain area Trade Theory & Practical impart professional - skills and knowledge, while Core area - Workshop Calculation and science, Engineering Drawing 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.
- Document the technical parameters related to the task undertaken.

2.2 CAREER PROGRESSION PATHWAYS:

- 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 two years (*Basic Training and On-Job Training*): -

Total training duration details: -

Time (in months)	1-3	4-12	13-15	16-24
Basic Training	Block– I	-----	Block – II	-----
Practical Training (On - job training)	----	Block – I	-----	Block – II

Furniture and Cabinet Maker

A. Basic Training

For 02 yrs. Course (Engg) :-(**Total 06 months:** 03 months in 1st yr. + 03 months in 2nd yr.)

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

S No.	Course Element	Total Notional Training Hours	
		For 02 Yrs. course	For 01 Yr. course
1.	Professional Skill (Trade Practical)	550	275
2.	Professional Knowledge (Trade Theory)	240	120
3.	Workshop Calculation & Science	40	20
4.	Engineering Drawing	60	30
5.	Employability Skills	110	55
	Total (Including internal assessment)	1000	500

B. On-Job Training:-

For 02 yrs. Course (Engg) :-(**Total 18 months:** 09 months in 1st yr. + 09 months in 2nd yr.)

Notional Training Hours for On-Job Training: 3120 Hrs.

For 01 yr. course (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 (Engg)	1000 hrs.	3120 hrs.	4120 hrs.
For 01 yr. course (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 (section-2.4.2). 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 (section-2.4.2) 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.

Brief description of Job roles:

Furniture Maker, Wood makes and repairs chairs, tables, benches, desks, shelves etc., by common carpentry processes using hand and or power tools or both. Studies drawing or sample, calculates sizes and quantity of timber required. Prepares patterns of different parts of article to be made on card board. Marks off pieces using patterns, square, pencil, rule or scribe and saws and shapes them according to specifications by sawing, planing, drilling etc. Marks and makes, necessary joints such as dove-tail, Tenon mortise, lap etc. Checks dimensions and fitting of joints frequently. Fixes hinges, hooks etc., at required places. Assembles different parts and fits them permanently by gluing, drilling, dowelling, nailing screwing etc., as necessary. Fills up superfluous holes etc., with putty; smoothens surface using sand paper, earth (yellow) and files. Checks completed articles and ensures correct fitting, rigidity and finish. Sharpens his own tools. May polish or paint articles made.

Cabinet Maker makes high class wooden furniture such as ward-robres, dressing tables, sofa sets, radio cabinets etc., according to design or specification using power or hand tools or both. Studies drawing or samples. Selects timber and calculates quantity required. Marks cuts and shapes oversize pieces to required dimensions by sawing, planing, etc. Makes necessary joints such as dove-tail, tenonmortise, half lap etc. Checks joints frequently and finishes them ensuring firmness and correct fitting. Assembles parts for trial, rectifies defects if any and then dismantles them for further work. Finishes inside portions, which cannot be worked after assembling and smoothens outer portions using plane, shaver (tools) etc. Applies glue in joints and reassembles parts step by step, securing joints with dowels (wooden or bamboo pins), screws or nails as required. Fixes hinges, brackets etc. where necessary. Finishes outer surface by filling holes and cracks with putty and using different grades of sand papers to ensure better polish. Sharpens his own tools. May fix metal or other fittings on furniture body. May also polish and varnish furniture.

Reference NCO 2015: 7522.0100, 7522.0200

4. NSQF LEVEL COMPLIANCE

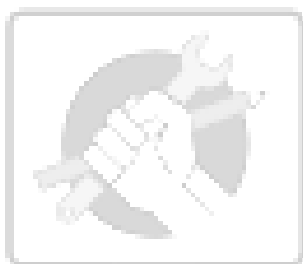
NSQF level for Furniture and Cabinet Maker trade under ATS: **Level 5**

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 Furniture and Cabinet Maker under ATS mostly matches with the Level descriptor at Level- 5.

The NSQF level-5 descriptor is given below:

Level	Process Required	Professional Knowledge	Professional Skill	Core Skill	Responsibility
Level 5	Job that requires well developed skill, with clear choice of procedures in familiar context.	Knowledge of facts, principles, processes and general concepts, in a field of work or study	A range of cognitive and practical skills required to accomplish tasks and solve problem by selecting and applying basic methods, tools, materials and information.	Desired mathematical skill, understanding of social, political and some skill of collecting and organizing information, communication.	Responsibility for own work and Learning and some responsibility for other's works and learning.

5. GENERAL INFORMATION

Name of the Trade	FURNITURE AND CABINET MAKER
NCO-2015	7522.0100, 7522.0200
NSQF Level	Level – 5
Duration of Apprenticeship Training (Basic Training + On-Job Training)	Two years (02 Blocks each of one year duration).
Duration of Basic Training	a) Block –I : 3 months b) Block – II : 3 months Total duration of Basic Training: 6 months
Duration of On-Job Training	a) Block–I: 9 months b) Block–II : 9 months Total duration of Practical Training: 18 months
Entry Qualification	Essential Passed in 8 th class examination under 10+2 System of education or its equivalent. Desirable Passed in 10 th class examination under 10+2 system of education with Science as one of the subject or its equivalent
Selection of Apprentices	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	01 year
CTS trades eligible for Furniture And Cabinet Maker Apprenticeship	Carpenter

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 Furniture and Cabinet Maker course of 02 years duration under ATS.

Block I & II:

1. Recognize & comply safe working practices, environment regulation and housekeeping.
2. Understand and explain different mathematical calculation & science in the field of study including basic electrical. *[Different mathematical calculation & science -Work, Power & Energy, Algebra, Geometry & Mensuration, Trigonometry, Heat & Temperature, Levers & Simple machine, graph, Power transmission, Pressure]*
3. Interpret specifications, different engineering drawing and apply for different application in the field of work. *[Different engineering drawing-Geometrical construction, Dimensioning, Layout, Method of representation, Symbol, scales, Different Projections, Machined components & different thread forms, Assembly drawing, Sectional views, Estimation of material, Electrical & electronic symbol]*
4. Select and ascertain measuring instrument and measure dimension of components and record data.
5. Explain the concept in productivity, quality tools, and labour welfare legislation and apply such in day to day work to improve productivity & quality.
6. Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.
7. Explain personnel finance, entrepreneurship and manage/organize related task in day to day work for personal & societal growth.
8. Plan and organize the work related to the occupation.

6.2 SPECIFIC LEARNING OUTCOME

Block – I

1. Stack timber vertically, horizontally and other ways.
2. Perform different processes of seasoning of timber.
3. Apply different types of preservation and preservatives
4. Identify different types of timber and their properties.
5. Find defects in timber.
6. Prepare cutting list according to drawing or sketches.
7. Select, use and maintain hand tools.
8. Use special carpentry hand tools, such as bow saw, fret saw, key hole saw, block plane shoulder plane, compass plane, router etc. chisels boring tools, bits etc.

Furniture and Cabinet Maker

9. Shape, sharpen and set different types of saws.
10. Perform grinding, sharpening and honing of plane blades chisels, etc.
11. Use workshop equipment such as use of bench hooks bench stop shooting board, metre box, dowel plate etc.
12. Use various types of adhesives.
13. Practice with laminated sheets –block boards, plywood hardboard, Norwood, sun-mica sheets, insulation, boards, etc.
14. Use veneer in cabinet making & other furniture's.
15. Perform carving work in the furniture making and cabinet work.
16. Prepare dowels (wooden and metal) for various uses in furniture making
17. Use different types of wood screws, nails, coach screw coach bolt, etc.
18. Construct and fit cabinet.
19. Make and fit hanging, or supporting plates (plain or dovetail plates etc, from M.S., brass, G.I sheets).
20. Fit hinges, locks, handles, fasteners, flush bolts, tower bolts, dastors, hasp and staple, door ring, door bolts, eye and hook etc.
21. Use hand tools as per grain structure and knots.
22. Construct different types of joints under various group like lengthening, broadening and framing group –halving joints, mortise and tenon joints, housing joint, scarf joints, butt joints, rivet, tongued and grooved joints dovetail and other framing joints.

B. Block – II

23. Operate wood working machines such as band saw, circular saw, surface planner, thicknesses, wood tuning, lathe, drilling machine, grinding, mortise, sanding machines etc.
24. Use portable machines like drilling, sanding, router.
25. Make layout on lay board to actual size for stool, chair and make different types of furniture such as stool, chair, table, sofa set, cot.
26. Perform curved and shaped work, use of template etc.
27. Manufacture cabinet, book case, rack, almirah as a project work.
28. Make drawer, cupboard, Magazine rack with different types of fittings such as fitting of hinges lock handles.
29. Design and make different types of folding furniture like chair, table rack etc. composite metal structure
30. Perform the work of Gluing, cramping, pinning and finishing the furniture.
31. Prepare surface with toothing plane, scraper and sand paper.
32. Prepare and apply stains.
33. Perform grain filing and artificial grain making on surface
34. Prepare French polish and application thereof.

Furniture and Cabinet Maker

35. Varnish the furniture/cabinets.
36. Make upholstery on stool top, chair seat, sofa set etc.
37. Use glass sheet/plastic sheet such as glass top for table, show case.
38. Make picture frame and fit glass and finished with polish.
39. Prepare packing/crate for furniture.
40. Repair different types of furniture and cabinets.
41. Perform re-conditioning of articles, addition and alteration of the parts/of the furniture.
42. Cane chair seats and backs etc.

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



Skill India
कौशल भारत - कुशल भारत

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 Protective 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. Understand, explain different mathematical calculation & science in the field of study including basic electrical and apply in day to day work. <i>[Properties & uses of Ferrous & no-ferrous metals & alloys, Arithmetic, Heat & Temperature, Rest & Motion, Newton's Laws of motion, Moment of Forces, Levers, Shear Force & Bending Moment, Stress & Strain, Algebra, Electrical & its uses, Work, Power & Energy, Geometry – Properties of triangles & Angles, Mensuration – Area & Volume of different figures & solids.]</i>	2.1 Properties and uses of C.I and W.I. Fundamental Arithmetical Operation- addition, subtraction, multiplication, division of whole numbers. 2.2 Properties and uses of plain carbon steel and alloy steel. Properties and uses of copper, zinc, lead, tin and aluminum. 2.3 Fraction and decimals, conversion- fraction to decimal and vice versa. Simplification, application of fundamental arithmetical operation to shop problems. 2.4 Properties and uses of brass, bronze, solder, bearing metal, timber, rubber. System of units- British metric and S.I. units for length area, volume, capacity, weight, time, angle, their conversion. 2.5 Effect of alloying elements on the property of C.I. and Steel. Heat and temperature, their thermometric scales their conversion, temperature measuring instruments of quantity of heats, specific heat, latent heat, heat loss and heat gain, simple problems. 2.6 Rest and Motion, velocity, acceleration. Newton's law of motion. Moment of forces. Simple problems on straight and bell cranked levers. Mass, volume, density, weight C.G.S., M.K.S. and F.P.S. units of force, weight etc. their conversion- shop problems. 2.7 Power & Roots: Factor, power, base, exponent, multiplication & division of power, root of a number. Square root by arithmetic and problems related to trade. 2.8 Effect of forces on materials in such application as extending, bending, twisting, shearing etc. meaning of stress and strain. Percentage- changing percent to decimal and fraction and vice-versa. Problems on percentage related to trade. Meaning of stress, strain, modulus of elasticity. 2.9 Algebraic symbols and fundamentals, algebraic Operations. Signs and Symbols used in algebra, co-efficient, terms-like and unlike terms. Algebraic addition, subtraction, multiplication and division. Power and exponent. Laws of
--	---

Furniture and Cabinet Maker

	exponent. Algebraic simplification problems. Electrical and its uses: Electric current-Positive & Negative terminals, uses of fuses and switches conductor and insulators.
	2.10 Work, Power, Energy. Geometry & Mensuration.
3. Interpret specifications, different engineering drawing and apply for different application in the field of work. <i>[Different engineering drawing-Geometrical construction, Dimensioning, Layout, Method of representation, Symbol, scales, Different Projections, Machined components & different thread forms, Assembly drawing,]</i>	3. 1. Read & interpret the information on drawings and apply in executing practical work.
	3. 2. Read & analyse the specification to ascertain the material requirement, tools, and machining /assembly /maintenance parameters.
	3. 3. Encounter drawings with missing/unspecified key information and make own calculations to fill in missing dimension/parameters to carry out the work.
	3. 4. Orthographic projections – 1 st angle & 3 rd Angle.
	3. 5. Isometric views.
	3. 6. Blue print reading.
4. Select and ascertain measuring instrument and measure dimension of components and record data.	4.1 Select appropriate measuring instruments for furniture & cabinet making (as per tool list).
	4.2 Ascertain the functionality & correctness of the instrument.
	4.3 Measure dimension of the components & record data to analyse the with given drawing/measurement.
5. Explain the concept in productivity, quality tools, and labour welfare legislation and apply such in day to day work to improve productivity & quality.	5.1 Explain the concept of productivity and quality tools and apply during execution of job.
	5.2 Understand the basic concept of labour welfare legislation and adhere to responsibilities and remain sensitive towards such laws.
	5.3 Knows benefits guaranteed under various acts
6. Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.	6.1 Explain the concept of energy conservation, global warming, pollution and utilize the available recourses optimally & remain sensitive to avoid environment pollution.
	6.2 Dispose waste following standard procedure.
7. Explain personnel finance, entrepreneurship and manage/organize related task in day	7. 1. Explain personnel finance and entrepreneurship.
	7. 2. Explain role of Various Schemes and Institutes for self-employment i.e. DIC, SIDA, SISI, NSIC,

Furniture and Cabinet Maker

to day work for personal & societal growth.	SIDO, Idea for financing/ non financing support agencies to familiarizes with the Policies /Programmes & procedure & the available scheme.
	7. 3. Prepare Project report to become an entrepreneur for submission to financial institutions.
8. Plan and organize the work related to the occupation.	8. 1. Use documents, drawings and recognize hazards in the work site.
	8. 2. Plan workplace/ assembly location with due consideration to operational stipulation
	8. 3. Communicate effectively with others and plan project tasks
	8. 4. Assign roles and responsibilities of the co-trainees for execution of the task effectively and monitor the same.
SPECIFIC OUTCOME	
<u>Block-I & II (Section:10 in the competency based curriculum)</u>	
<i>Assessment Criteria i.e. the standard of performance, for each specific learning outcome mentioned under block – I & block – II (section: 10) must ensure that the trainee achieves well developed skill with clear choice of procedure in familiar context. Assessment criteria should broadly cover the aspect of Planning (Identify, ascertain, estimate etc.); Execution (perform, illustration, demonstration etc. by applying 1) a range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information 2) Knowledge of facts, principles, processes, and general concepts, in a field of work or study 3)Desired Mathematical Skills and some skill of collecting and organizing information, communication) and Checking/ Testing to ensure functionality during the assessment of each outcome. The assessments parameters must also ascertain that the candidate is responsible for own work and learning and some responsibility for other's work and learning.</i>	

BASIC TRAINING (Block – I)**Duration: (03) Three Months**

Week No.	Professional Skills (Trade Practical)	Professional Knowledge (Trade Theory)
1-2	Familiarization with the institute, Workshop Sections and general places. Wood working sections wood working machine shop. Introduction to the trade, General Safety, Discipline give instruction related with duties of trainees, general advice and guidance etc. Identification demonstration and use of Hand measuring tools.	Introduction to trade & safety precaution, brief description of hand tools, their classification sizes, types etc. Marking Tools such as: Scriber, try square, marking gauge, punches, etc. Measuring tools such as: Foot rule, Steel Tape, four fold rule etc. Cutting Tools such as: Saws, planes, Chisels, setting and sharpening of saws, grinding, sharpening, holding of plane blade and chisel, care and maintenance etc. holding and driving tools their description and use
3	Sawing Practice: Ripping, Cross – cutting on saw, horse/bench vice.	Market form of common India timbers- Classification, names description, identification, sources, uses, cross section of tree trunks/structure of wood, defects and diseases, causes and remedies, grain distortion.
4	Use of different types of saws setting and sharpening of rip saw, cross cut saw etc.	Classification of Joints- different types, their description and uses such as framing joints, half lap joints, tenon and mortice joints trenched and housed joint, Bonding.
5	Planning Practice: Use of jack plane, trying plane, smoothing planes etc.	Introduction of wood working machines:- Function, common operations and safety precautions. Care and maintenance, oiling and greasing etc. to be explained in brief of the following machines. (a) Band Saw (b) Circular Saw (c) Wood turning lathe (d) Grinder (e) Planer (Surfacer or Thicknesser) (f) Drilling machine (g) Mortiser
6	Grinding, sharpening lapping & stropping and setting of plane blades.	
7	Use of marking and measuring tools –try square, straight edge, winding strips, gauge, etc.	

Furniture and Cabinet Maker

		(h) Tenoning machine (i) Sander (j) Portable machines
8-9	Use of workshop equipment: Bench Hook, bench stop, shooting board, work bench, carpenter vice, metre box, etc. Chiseling Practice: Chiseling along the grain, across the grain vertical/horizontal, etc. Grinding, sharpening, honing of chisels.	Characteristics of wood: physical and mechanical properties of wood, qualities of good timber.
10	Joints, half lap joints: Marking and making cross halving, tee, corner etc. Trenching/Housing: Different joints, Marking and making tenon and mortice joints through bridle joints, oblique double bareface, double hatched etc.	Conversion of timber: methods, advantages and disadvantages of each method and uses
11	Dovetail joints: Single, common, lapped secret. Broadening joints: Simple butt, glue butt, doweled rebatted, secret screw butt joint, tongued and grooved, butt feather, tongued and grooved joints etc. Lengthening joints: Simple scarf, beveled scarf, table scarf, sloping scarf with wedged etc.	Types of special saws: compass, frame, bow, fret etc. parts functions and uses, sharpening, setting, care and maintenance of compass plane.
12	Marking and Making: A frame of different joints Acquaintance with machine parts functioning of band saw machine	Types of special planes, parts functions, uses grinding sharpening the blade, care and maintenance of compass plane Seasoning: types, description, uses defects etc. advantages disadvantages
13	Internal Assessment / Examination 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.

BASIC TRAINING (Block – II)**Duration: (03) Three Months**

Week No.	Professional Skills (Trade Practical)	Professional Knowledge (Trade Theory)
1	Operation: Ripping, cross-cutting, curve cutting, bevel, chamfer, etc. Circular saw machine. Planing machine, types functions, operations: surfacing, thicknessing, chamfering etc.	Types of timber used in different furniture making.
2-3	Wood turning lathe: Parts, functions, operations: Plain turning, chisel handle, taper tuning etc. Grinding Machines: Grinding of hand tools and other parts. Drill machine: Parts, functions, use of taper shank drills, straight shank drills with drill chuck.	Boards and sheets: plywood, black board, laminated board, hard board, nuwood, sunmica sheets, etc. descriptions, types market size, uses, selection and colour. Method of fixing laminated sheets.
4-5	Use of special saws: Key hole saw, frame saw, bow saw, fret saw, etc. Use of special planes, Rivets, Flaw, spoke compass plan molding planes, etc. Use of counter drill, hand drill, ratchet brace, breast drill.	Glues- and synthetic adhesives, types, uses, advantages and disadvantages.
6	Use of different types of drill bits hand augers. To find out moisture content in timber with the help of moisture metre and oven drying. Stacking (Vertical & Horizontal) Chemical treatment of timber	Manufacturing techniques, advantages, disadvantages, wood & other materials required to make them, joints used.
7	Seasoning of timber. Natural and artificial, advantages and disadvantages.	
8-9	Marking and making of simple furniture like plain notice board, mini stool (straight legged) Chalk box. Tea tray or office tray. Book rack. Stool (Standard height, taper legged) Taper frame, plain table. Use of adhesives: glasses etc. Use of nails, screws, nut and bolts, hinges, nut and bolt, hasp and staple, locks etc. Use of plywood, laminated board, hard	Hardware used such as- Nails, screws types, sizes, uses, nuts and bolts, washers, locks, hinges hasp and staple, tower, bolt, door handle and other fitting types, description sizes uses etc.

Furniture and Cabinet Maker

	board, nu wood etc.	
10	Preparation of surface, use toothing plane for knotty or inter-locked grained timber, scraping, sand papering etc. Use of putty. Staining: types, process/method, uses, varnishing & Polishing types, process/method, uses (French polish, wax polish etc.)	Wood surface and finishing materials: Preparation sand papers, staining, varnishing, polishing - materials methods, cares etc.
11	Chipping, filling, making some basic exercises, Drilling, countersinking, taping etc Marking and making hanging plate, corner plate, name plate, different types of clamps/angle plates used in wooden furniture Reading of development drawings able to make layout of simple pattern – parallel line system and radial line system-cylinder, cone etc, cutting paper/thin sheets – folding –forming the sheets as per drawings	Common sheet metal tools-description, shearing, punching folding, bending operations, etc.
12	Marking and making simple exercises. Punching/Making holes washers etc. Shearing, folding, bending of sheets at different angles Fitting aluminum channel for sliding door-heading/bordering with aluminum angle on table top or racks. Bending of Steel and conduit pipe and aluminum channels for furniture.	Preparation of Bill of materials simple estimation and costing.
13	Internal Assessment 03 days	

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 WORKSHOP CALCULATION SCIENCE & ENGINEERING DRAWING

Block – I		
Sl. No.	Workshop Calculation and Science (Duration: - 20 hrs.)	Engineering Drawing (Duration: - 30 hrs.)
1.	Properties and uses of C.I and W.I. Fundamental Arithmetical Operation-addition, subtraction, multiplication, division of whole numbers. Properties and uses of plain carbon steel and alloy steel. Fraction and decimals, conversion- fraction to decimal and vice versa. Properties and uses of copper, zinc, lead, tin and aluminum.	Importance of Engg. Drawing and its knowledge- free hand sketches of straight, oblique and perpendicular lines, plain figures like square, rectangle, circle, polygons triangles etc. Identification of simple geometrical solids from the given models/ teaching aids-free hand sketches for the simple solids like cube, cone, prism, pyramid, rectangular block etc.
2.	Simplification, application of fundamental arithmetical operation to shop problems. Properties and uses of brass, bronze, solder, bearing metal, timber, rubber. System of units- British metric and S.I. units for length area, volume, capacity, weight, time, angle, their conversion. Effect of alloying elements on the property of C.I. and Steel. Heat and temperature, their thermometric scales their conversion, temperature measuring instruments of quantity of heats, specific heat, latent heat, heat loss and heat gain, simple problems.	Importance of good printing of letters and numbers on drawing –free hand practice of lettering and numbering style as per IS: 696-1972. Standard line convention and their meaning and their scope of application on Engg. Drawing as per IS: 696-1972. Standard symbols for simple Engg. Elements and materials used on Drawing as per I.S.I (hand outs to be issued for reference)
3.	Heat and temperature, their thermometric scales their conversion, temperature measuring instruments of quantity of heats, specific heat, latent heat, heat loss and heat gain, simple problems. Rest and Motion, velocity, acceleration. Newton's law of motion. Moment of forces. Simple problems on straight and bell cranked levers. Mass, volume, density, weight C.G.S., M.K.S. and F.P.S. units of force, weight etc. their conversion - shop problems.	Free hand sketches of hand tools and measuring tools related to the trades e.g. hammer, file chisel, drill hacksaw, tongs, snips, solder iron mallets, anvil, punch, horn, blow pipe, electrode, holder, scale, caliper, try-square, bench vice etc. from the supplied sketches or samples. Importance of putting dimension on the drawing as per IS: 696-1972, how to measure the sizes of simple parts and the locations of the other

		operational surfaces, using simple measuring instruments and how to transfer the measurements on the drawings of features for dimension. Free hand sketches to study the techniques employed in dimensioning on the drawing of features for size, location, hole, areas, angles, chamfer, taper etc. from given sample or sketches.
4.	Power & Roots: Factor, power, base, exponent, multiplication & division of power, root of a number. Square root by arithmetic and problems related to trade. Effect of forces on materials in such application as extending, bending, twisting, shearing etc. meaning of stress and strain. Percentage-changing percent to decimal and fraction and vice-versa. Problems on percentage related to trade. Meaning of stress, strain, modulus of elasticity.	Isometric and oblique drawings – their method of representation using simple solids like cube, rectangular block, stepped block, cylindrical features, prisms, etc. Free hand sketches for the given features. Orthographic projection standard system (1st angle orthographic projection and 3rd angle orthographic projection), as per IS: 696-1972- Free hand sketches of simple objects like Vee blocks, stepped blocks, simple brackets, blocks with holes and grooves to represent the views both in 1st and 3rd angle. Orthographic projections with dimensions.
5.	Meaning of tenacity, elasticity-malleability, brittleness, hardness, ductility examples. Ratio and proportion: Ratio, finding terms and ratio, proportion, direct proportion and indirect proportion. Application of ratio and proportion to shop problems. Mixed direct and indirect proportions-problems. Algebraic symbols and fundamentals, algebraic operations. Signs and Symbols used in algebra, co-efficient, terms-like and unlike terms. Algebraic addition, subtraction, multiplication and division. Power and exponent. Laws of exponent.	Importance of sectioning on drawing-Std. methods (full and half section, revolved and removed section, local section) as per IS: 696-1972-Std. parts which are sectioned free hand sketches to represent the different sectional views in the given orthographic drawing of parts, with support of models e.g. simple hollow blocks and simple castings with dimensions. How to convert isometric/oblique drawings to orthographic and orthographic to isometric/oblique. Drawings-related problems for free hand sketches for trade related simple

Furniture and Cabinet Maker

		parts of exercises.
6.	Algebraic simplification problems. Electrical and its uses: Electric current-Positive & Negative terminals, uses of fuses and switches conductor and insulators. Factor and equations algebraic formulae. Factors and different types of factorization. Equations-simple-simultaneous-quadratic, application, construction and solution of problems by equations. Different forms of energy: Heat, mechanical and electrical examples, conversion from one form to another. Geometry: fundamental geometrical definition, angles and properties of angles, triangles, and properties of angles, triangles, and properties of triangles. Pythagoras Theorem, Properties of similar triangle, rectangle, square.	Free hand sketches of standard rivet forms as per ISI-welding symbols as per ISI employed on drawings-standard forms of key & cotters. Free hand sketches to study the method of surface. Development of simple geometrical solids like cube, cone, prism, pyramid, rectangular block etc.
7.	Rhombus, parallelogram etc. and their properties. Circle and properties of circle, regular polygon. Application of geometry to shop problems. Mensuration: Area of Triangles, square, rectangle, parallelogram, trapezium, trapezoid, regular polygons, circle, hollow circle. Sector of circle, segment of circle, ellipse and fillet, solid figures- prism, cylinder, pyramid, cone, frustum of a cone, sphere, spherical segment, material, weight and cost-shop problems. Practice on simple pocket calculators.	Screw thread forms as per ISI conventional application of internal and external screw thread-free hand sketches of nut bolts screw etc. Importance of Blue Print Reading-guide line how to read-simple Blue Print exercises reading relate to missing lines, missing views, missing dimensions, missing section, identification of surface symbols, etc. Solution of NCVT (N.C.V.T.) Test Papers.

Block – II		
Sl. No.	Workshop Calculation and Science (Duration: - 20 hrs.)	Engineering Drawing (Duration: - 30 hrs.)
1	Revision of previous year's work. Elementary trigonometry and its application to the shop-floor problems.	Revision of previous years work. Development of surfaces of simple objects.
2	Problems connected with the estimation of time, materials cost etc for the trade. Algebra: Algebraic symbols, addition, subtraction, multiplication and division of expressions involving algebraic symbols. Simple equations and transpositions – problems. Standard algebraic formulae e.g. $(a + b)^2$. Simple simultaneous equations with two unknown quantities.	Curves of interpenetration-simple exercises.
3	Further problems as applicable to the trade. Advanced problems on mensuration, work, power and energy.	Free hand sketching of jigs and fixtures as applicable to the trade. Advanced Blue Print Reading.
4	Meaning of tenacity, elasticity, malleability, plasticity, hardness compressibility and ductility. Meaning of stress, strain, modulus of elasticity, ultimate tensile strength, factor of safety and different types of stresses.	Developments as applicable to the trade.
5	Descriptive explanation of expansion of solids, liquids and gases due to heat- coefficient of expansion. Brief description of transference of heat conduction, convection and radiation. Properties and use of common fuels-coals-oils B.Th. U. C.H.U. calorie-specific heat of liquid and solid, caloric value of different types of fuels.	Code of practice for General Engineering Drawing according to ISI (IS: 696-1960) further revised in 1972.

9.2 EMPLOYABILITY SKILLS**(DURATION: -110 HRS.)**

Block – I (Duration – 55 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 Networking and Internet	Basic of computer Networks (using real life examples), Definitions of Local Area Network (LAN), Wide Area Network (WAN), Internet, Concept of Internet (Network of Networks),

Furniture and Cabinet Maker

	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
Block – II Duration – 55 hrs.	
4. Entrepreneurship Skills Duration: 15 Hrs. Marks : 06	
Concept of Entrepreneurship	Entrepreneur - Entrepreneurship - Enterprises:-Conceptual issue Entrepreneurship vs. management, Entrepreneurial motivation.

Furniture and Cabinet Maker

	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 & Marketing analysis	Qualities of a good Entrepreneur, SWOT and Risk Analysis. Concept & 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.

Furniture and Cabinet Maker

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-JOB TRAINING)

BROAD LEARNING TO BE COVERED IN INDUSTRY FOR FURNITURE AND CABINET MAKER TRADE:

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

Block – I

1. Stack timber vertically, horizontally and other ways.
2. Perform different processes of seasoning of timber.
3. Apply different types of preservation and preservatives
4. Identify different types of timber and their properties.
5. Find defects in timber.
6. Prepare cutting list according to drawing or sketches.
7. Select, use and maintain hand tools.
8. Use special carpentry hand tools, such as bow saw, fret saw, key hole saw, block plane shoulder plane, compass plane, router etc. chisels boring tools, bits etc.
9. Shape, sharpen and set different types of saws.
10. Perform grinding, sharpening and honing of plane blades chisels, etc.
11. Use workshop equipment such as use of bench hook bench stop shooting board, metre box, dowel plate etc.
12. Use various types of adhesives.
13. Practice with laminated sheets –block boards, plywood hardboard, Nuwood, sunmica sheets, insulation, boards, etc.
14. Use veneer in cabinet making & other furniture.
15. Perform Carving work in the furniture making and cabinet work.
16. Prepare dowels (wooden and metal) for various uses in furniture making.
17. Use different types of wood screws, nails, coach screw coach bolt, etc.
18. Construct and fit cabinet.
19. Make and fit hanging, or supporting plates (plain or dovetail plates etc, from M.S., brass, G.I sheets).
20. Fit hinges, locks, handles, fasteners, flush bolts, tower bolts, dastors, hasp and staple, door ring, door bolts, eye and hook etc
21. Use hand tools as per grain structure and knots.
22. Construct different types of joints under various group like lengthening, broadening and framing group –halving joints, mortise and tenon joints, housing joint, scarf joints, butt joints, rivet, tongued and grooved joints dovetail and other framing joints.

Furniture and Cabinet Maker

B. Block – II

23. Operate wood working machines such as band saw, circular saw, surface planner, thickness, wood tuning, lathe, drilling machine, grinding, mortise, sanding machines etc.
24. Use portable machines like drilling, sanding, router.
25. Make layout on lay board to actual size for stool, chair and make different types of furniture such as stool, chair, table, sofa set, cot.
26. Perform curved and shaped work, use of template etc.
27. Manufacture cabinet, book case, rack, almirah as a project work.
28. Make drawer, cupboard, Magazine rack with different types of fittings such as fitting of hinges lock handles.
29. Design and make different types of folding furniture like chair, table rack etc. composite metal structure
30. Perform the work of gluing, cramping, pinning and finishing the furniture.
31. Prepare surface with tooting plane, scraper and sand paper.
32. Prepare and apply stains.
33. Perform grain filing and artificial grain making on surface
34. Prepare French polish and application thereof.
35. Varnish the furniture/cabinets.
36. Make upholstery on stool top, chair seat, sofa set etc.
37. Use glass sheet/plastic sheet such as glass top for table, show case.
38. Make picture frame and fit glass and finishes with polish.
39. Prepare packing/crate for furniture.
40. Repair different types of furniture and cabinets.
41. Perform re-conditioning of articles, addition and alteration of the parts/of the furniture.
42. Cane chair seats and backs etc.

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.

INFRASTRUCTURE FOR PROFESSIONAL SKILL & PROFESSIONAL KNOWLEDGE

FURNITURE AND CABINET MAKER			
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 Tool & Equipments	Specifications	20 Nos.
1.	Rule, six fold wooden 1 metre (inch and mm)		
2.	Marking knife	200 mm length	20 Nos.
3.	Carpenter square	200 mm	20 Nos.
4.	Square, bevel	250 mm	20 Nos.
5.	Carpenter marking gauge		20 Nos.
6.	Carpenter mortice gauge		20 Nos.
7.	Saw, hand	450 mm	20 Nos.
8.	Saw tenon	300 mm	20 Nos.
9.	Plane, jack metal cutter	335 mm x 50 mm	20 Nos.
10.	Plane smoothing, metal cutter	200 mm x 80 mm	20 Nos.
11.	Chisel, firmer (Bevel edge)	6 mm, 10, 15, 20 & 25 mm width (5 nos.)	20 Nos.
12.	Chisel, Mortice,	6,10,15 mm (3 Nos.)	20 Nos.
13.	Screw driver (Cabinet pattern)	300 mm	20 Nos.
14.	Mallet medium size		20 Nos.
15.	Hammer, claw	500 gm	20 Nos.
16.	Oil stone (carborundum universal silicon Carbide combination rough and fine)	200 x 50 x 25 mm	20 Nos.
17.	Hand brush for bench cleaning	450 mm	
B :TOOLS , EQUIPMENT & GENERAL			
18.	Measuring tape	3 metre	11
19.	Construction scale	one meter	4
20.	Spring caliper inside	150 mm	4
21.	Spring caliper outside	150 mm	4
22.	Wing compass	300 mm	2
23.	Trammel		2
24.	Spirit level	300 mm	2
25.	Rip saw	600 mm	4
26.	Cross cut saw	600 mm	4
27.	Key hole saw	250 mm	2
28.	Fret saw frame	150 mm	2

Furniture and Cabinet Maker

29.	Compass saw	350 mm	4
30.	Adze	1.5 kg	2
31.	Trying plane (metal) cutter	450 mm x 60 mm	2
32.	Plane rabbet adjustable cutter	250 mm x 6 mrt x 9 mm	4
33.	Plough plane	set of 8 cutter upto 12 mm width	4
34.	Spoke shaves cutter	50 mm	4
35.	Plane adjustable circular	250 mm	4
36.	Router plane		4
37.	Moulding plane set		4
38.	Cabinet scraper	100 mm	4
39.	Gauge chisel, finner,	6, 10, 12, 16 & 20 mm	8
40.	Gauge chisel seritting	6, 10, 12, 16 & 20 mm	8
41.	Ball pein hammer	600 gms.	4
42.	Cross pein hammer	600 gms	4
43.	Screw driver	450 mm	4
44.	Screw driver	250 mm	4
45.	Screw driver	150 mm	4
46.	Pincer	150 mm	4
47.	File half round 2 nd cut	250 mm	4
48.	File half round wood rasp bastard	300 mm	8
49.	File slim taper	100 mm	12
50.	File slim taper	150 mm	12
51.	Card file (Steel wire brush for file)		4
52.	Hand drill 6 mm capacity		8
53.	Country drill with bow (Ball bearing type)		4
54.	Ratchet brace swap	250 mm	4
55.	Breast drill	6 mm capacity	2
56.	Centre punch	5 mm	4
57.	Hand Auger	10, 12, 14, 16, 18, 20, 22 & 25 mm	2
58.	Centre bits	6, 8, 10, 12 mm	2
59.	Expansion bits set		2
60.	Twist drill bits	6, 8, 10, 12 mm	2
61.	Counter sink bit (Rose type)	12 mm	4
62.	Snip straight	200 mm	1
63.	Combination side cutting pliers		2
64.	Oil can		4
65.	Plunger saw set/pistol grip type		2
66.	Number punch	12 mm	2
67.	Slip stone	100 mm	2
68.	Round crow bar with chisel and claw and	1070 x 25 mm	2
69.	'G' clamp	100 mm	8

Furniture and Cabinet Maker

70.	'G' clamp	150 mm	8
71.	'G' clamp	250 mm	4
72.	'T' bar clamp	0.6 meter	8
73.	'T' bar clamp	1.25 meter	4
74.	'T' bar clamp	1.75 meter	2
75.	Carpenter vice jaws	250 mm	16
76.	Saw sharpening vice jaws	250 mm	2
77.	Carving tools set		4
78.	Goggles pair		2
79.	Glass cutter		2
80.	Nails punch		4
81.	Surface plate	600 x 600 mm	1
82.	Carpenter's work bench	2400 x 900 x 800 mm height	8
83.	Steel locker 8 compartments with individual Locks	1980 x 910 x 480 mm depth	2
84.	Steel almirah with shelves	1980 x 910 x 480 mm depth	2
85.	Instructor table (Half secretariat)		1
86.	Instructor chair		2
87.	Stool		1
88.	Chalk board with easel		1
89.	Materials rack		1
C : GENERAL INSTALLATION & ACCESSORIES			
90.	Combine surfacer and thickner		1
91.	Circular saw machine	3.00 mm dia.	1
92.	Lathe, wood turning'	150 mm height of Centres 1.75 meter bed, motorized complete with a set of turning tools.	3
93.	Set of turning tools for above lathe machine		3
94.	Tenoning machine (Single ended).		1
95.	Mortising machine (Combined hollow chisel & chain)		1
96.	Bench grinder	200 mm wheel D.E. pedestal	1
97.	Drill machine	12 mm capacity	1
98.	Portable disc, sander	200 mm dia.	1
99.	Adjustable saw sharpener		1
100.	Electric heater	1000/1500 W	1
101.	Electric blower (Portable)		1
102.	Moisture meter		1
103.	Grease gun		1
104.	Spanner double ended set of 14		1
105.	Universal wood working machine		1
106.	Electrical drying over (small type)		1

Furniture and Cabinet Maker

107.	Band saw machine with provision of jointing the saw (Narrow type)		1
108.	Fire extinguisher		1
109.	Fire buckets		1

Note:

1. No additional items are required to be provided to the batch or unit working in the second shift except the trainees tool-kit and lockers.
2. The trainee for the main trade will be sent to the different sections for allied trade training separate list of tools and equipment required for allied trades are not included in this list.



Skill India
कौशल भारत - कुशल भारत

**INFRASTRUCTURE FOR WORKSHOP CALCULATION & SCIENCE AND ENGINEERING
DRAWING**

TRADE: FURNITURE AND CABINET MAKER

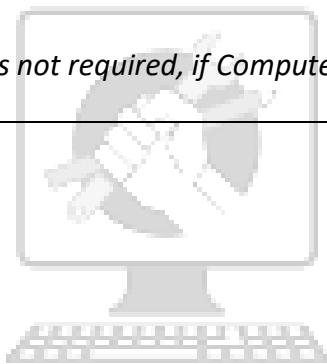
LIST OF TOOLS& EQUIPMENTS FOR -20APPRENTICES

1) **Space Norms** : 45 Sq. m.(For Engineering Drawing)

2) **Infrastructure:**

A : TRAINEES TOOL KIT:-			
Sl. No.	Name of the items	Specification	Quantity
1.	Draughtsman drawing instrument box		20+1 set
2.	Set square celluloid 45°	(250 X 1.5 mm)	20+1 set
3.	Set square celluloid 30°-60°	(250 X 1.5 mm)	20+1 set
4.	Mini drafter		20+1 set
5.	Drawing board IS: 1444	(700mm x500 mm)	20+1 set
B : Furniture Required			
Sl. No.	Name of the items	Specification	Quantity
1	Drawing Board		20
2	Models : Solid & cut section		as required
3	Drawing Table for trainees		as required
4	Stool for trainees		as required
5	Cupboard (big)		01
6	White Board	(size: 8ft. x 4ft.)	01
7	Trainer's Table		01
8	Trainer's Chair		01

TOOLS & EQUIPMENTS FOR EMPLOYABILITY SKILLS		
Sl. No.	Name of the Equipment	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.
<i>Note: - Above Tools & Equipments not required, if Computer LAB is available in the institute.</i>		



Skill India
कौशल भारत - कुशल भारत

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	Candidate Name	Father's/Mother's Name	Maximum Marks (Total 100 Marks)	15	5	10	5	10	10	5	10	15	15	Total internal assessment Marks	Result (Y/N)
				Safety consciousness	Workplace hygiene	Attendance/ Punctuality	Ability to follow Manuals/ Written instructions	Application of Knowledge	Skills to handle tools & equipment	Economical use of materials	Speed in doing work	Quality in workmanship	VIVA		
1															
2															