

**SYLLABUS OF SEMESTER SYSTEM
FOR THE TRADE OF**

Bamboo Works

SEMESTER-I & II

Under

**Craftsmen Training Scheme (CTS)
(One year/Two Semesters)**

**Redesigned in
2014**

**By
Government of India
Directorate General of Employment & Training
Ministry of Labour & Employment (DGET)**

GENERAL INFORMATION

1. **Name of the Trade** : Bamboo works
2. **NCO Code No** : 7424.35, 7424.10, 7429.90
3. **Duration of Craftsmen Training** : 12 Months (2 Semesters)
4. **Power Norms** : 10 KW
5. **Space Norms** : 100 Sq.m
6. **Entry Qualification of Trainee** : 8th Pass
7. **Unit size(No. Of trainees)** : 20
8. **Instructor's /Trainer's qualification Trade theory & trade practical:**
 - A. Essential (any one of the below)
 - i) Bachelor Degree in Civil/Mechanical Engineering with one year Experience in Bamboo work
 - ii) Diploma in Civil/Mechanical Engineering with two years Experience in Bamboo work
 - iii) NTC/ NAC in Bamboo work with three years of Teaching or Industrial experience in Bamboo work
 - iv) 10th pass with five years of Teaching or Industrial experience in Bamboo work
 - B. Desirable qualifications : Preference will be given to candidates with CITS (if not done CITS than must be trained within 02 years on joining).

Note:

Instructor qualification for W/shop Calculation, Engg Drawing & Employability Skill would be as per the training manual.

Course Information Sheet

Introduction:

- This course is meant for the candidates who aspire to become a professional Bamboo worker.
- This course is restructured as BAMBOO WORKS from the existing COE Bamboo Technology sector as follows.
 - First year BBT - Basic (2months) modules are converted in to CTS first semester
 - Second year advanced module Industrial Processing of Bamboos converted in to CTS second semester.

Terminal Competencies/Deliverables:

After successful completion of this course the trainee shall be able to perform the following skills with proper sequence.

1. Selection of appropriate Bamboo species for different industrial Handicraft products
2. Identification of various Innovative products which can be manufactured at large scale.
3. Selection of Treatment procedure which is suitable for particular products.
4. Identification of machineries, tools and equipments as per jobspecification.
5. Uses of portable hand and power operated tools for better production.
6. Operation and Maintenance of all machines.
7. Identification of suitable products as per market demand and make a process lay out for production.
8. Techniques of making various bamboo molded furniture.
9. Designing a newproduct as permarket need.
10. Estimate the cost of production of identified items.

Employment opportunities:

On successful completion of this course, the candidates shall be gain fully employed in the following industries:

1. Government sector like JAIL, State & Center government Handicraft corporations etc
2. In private sector industries in India and abroad.
3. Self employment

SEMESTER – I
(Six months)

Content:

Week no.	PRACTICAL	THEROY
	Basic course on Bamboo	
1-2	<p>History of Bamboo</p> <ul style="list-style-type: none"> • Demonstration of different bamboo item, its modern utilization by showing visual aids. Use of tools safety and workshop safety. • Demonstration through field visit and Nursery Practice 	<ul style="list-style-type: none"> • History of Bamboo utilization, day-to-day use of bamboo and modern application of bamboo. Types of Bamboo: Future prospects of bamboo technology. General Workshop safety & Tools safety. • Basics of Bamboo cultivation, type of propagation and practice in India and abroad,. Selection of bamboo to make various bamboo products.
3	<p>Preservation of Bamboo</p> <ul style="list-style-type: none"> • Use of Borax & Boric Acid, use of Smoke chamber and other Chemical Process. Practice of Traditional process • Practice of dyeing utilizing various chemical & vegetative dyes. 	<ul style="list-style-type: none"> • Various techniques of Preservation & Treatment of Bamboo(Through ancient/traditional and modern methods) • Colouring/Dyeing of Bamboo strips/slivers
4	<p>Introduction of Tools</p> <ul style="list-style-type: none"> • Operate and practice of hand tools. It's maintenance and precaution. Practice of measurement of all systems. Hand sawing, Drilling, Skinning, Filling practice. • Practice of hand-sawing. Drilling, Skinning, filling practice etc. 	<ul style="list-style-type: none"> • Introduction of various hand tools and machine tools used on Bamboo technology, measuring tools. Conversion table etc. • Brief description of Hand tools and Machine tools. Specification of tools and types of tools.
5	<p>Joints</p> <ul style="list-style-type: none"> • Practice in tongue and groove or male andfemale joint, Bolt fastening joint. Overlapping joint, U-shape joint. Horizontal joint, Vertical joint etc. 	<ul style="list-style-type: none"> • Joints: Briefing about various joints,method of joints, uses of joints.
6	<ul style="list-style-type: none"> • Use of Blow lamp Practice of pattern making, use of blow lamp and it precaution. 	<ul style="list-style-type: none"> • How to make pattern, banding, buffing,and polishing of bamboo.

7	<p>Bamboo processing Machine</p> <ul style="list-style-type: none"> Practice on different machineries used to make various primary bamboo products Practice of Cross Cutting machine, oiling and lubrication of machine 	<ul style="list-style-type: none"> Introduction of Bamboo Primary processing Machineries and its uses Brief description of cross cutting machine and how to operate, trouble shooting of this machines
8	<p>Splitting Machine</p> <ul style="list-style-type: none"> Practice of operation in Radial splitting, Machine Automatic splitting Machine, oiling and lubrication of machine Practice of operation in knot removing machine. Oiling 	<ul style="list-style-type: none"> Brief description of Radial Splitting machine, Automatic Splitter Machine and how to operate, trouble shooting of this machines Brief description of knot removing machine and how to operate, trouble shooting of the machine
9	<p>Polishing Machine</p> <ul style="list-style-type: none"> Practice of operation in polishing machine, oiling and lubrication of machine Practice of operation in manual slivering machine, oiling and lubrication of machine Practice of operation in round stick machine oiling and lubrication of machine 	<ul style="list-style-type: none"> Brief description of polishing machine and how to operate, trouble shooting of the machine Brief description of manual slivering machine and how to operate, trouble shooting of the machine. Brief description of Round stick making machine and how to operate trouble shooting of this machine
10	<p>Drill Machine</p> <ul style="list-style-type: none"> Practice of operation in electric drill machine, oiling and lubrication of machine Practice of operation in 2 side/4 side machine planer, oiling and lubrication of machine including preventive maintenance 	<ul style="list-style-type: none"> Brief description of electric Drill Machine and how to operate trouble shooting of this machines Brief description of 2 side/4 side planer machine and how to operate trouble shooting of this machine`
11	<p>Pressure Machine</p> <ul style="list-style-type: none"> Practice on Hydraulic Press Machine Practice on Resign Applicator machine 	<ul style="list-style-type: none"> Brief description of Hydraulic Press Machine and its operation & maintenance and also trouble shooting of this machines Brief description of Resign Applicator and Its operation & maintenance and also trouble shooting of this machines

12	Glue Mixing and Weaving Machine <ul style="list-style-type: none"> Practice on Glue Mixing machine and D D Saw machine Practice on weaving Machine 	<ul style="list-style-type: none"> Brief description of Glue Mixing Machine, DD Saw machine. How to operate and maintenance these machine Operation and maintenance of Automatic Weaving machine
13	Maintenance of Machine <ul style="list-style-type: none"> Cleaning of machine. Lubrication and oiling of machine and trouble shooting. 	<ul style="list-style-type: none"> What precaution should be observed in operating bamboo processing machine and proper maintenance of machine
14	Types of Furniture <ul style="list-style-type: none"> Demo of various type of furniture, Draw the Neat sketch of furniture 	<ul style="list-style-type: none"> Introduction: Use of various Household and Public furniture, Advantage of sketch making of various furniture designs.
15	Materials of Furniture <ul style="list-style-type: none"> Demonstration of different material used in Furniture making 	<ul style="list-style-type: none"> Use of Jigs& fixture. Bamboo, Cane, Wood, Nail, Adhesive, Binding wire, Plastic Rope, Nut-bolt etc.
16-21	<ul style="list-style-type: none"> Techniques and Furniture making Practice of furniture making 6- weeks <ol style="list-style-type: none"> Sofa set Chair Table Bed Beach & Garden Dining chair Wall Chair Swing Relaxing Chair Centre Table 	<ul style="list-style-type: none"> Various joineries used in furniture making process
22-23	Project work – Industrial visit	
24-25	Revision	
26	Examination	

SEMESTER-II

Content:

Week No	PRACTICAL	THEORY
1-2	Selection of Bamboo Variety <ul style="list-style-type: none"> • Identification of bamboo as per job requirement at practical field. 	<ul style="list-style-type: none"> • Various bamboo species and their utilization , • Selection of bamboo as per job specification.
3	Designing <ul style="list-style-type: none"> • Practice on free hand drawing • Practice on Drawing of various gift items, stationery Item 	<ul style="list-style-type: none"> • What is Design? • Free hand drawing of various items
4	Basics of Computer <ul style="list-style-type: none"> • Booting the Computer, Opening Windows, menus, using the mouse, create a directory in Windows, create a directory, create a File and Folder, use my documents, use start menu for opening an application, change control panel settings for display, Familiarize with Key Board and Keys. 	<ul style="list-style-type: none"> • Introduction to computer fundamentals and its parts, • Familiarizing with Drives, Booting of a Computer system, Using the mouse, right click, left click and use of operating systems like Windows OS, menu system, Tool bars,.
5	Word Processing <ul style="list-style-type: none"> • Practice on MS Word • Practice on Internet 	<ul style="list-style-type: none"> • Use of word processing software • Use of Internet
6-7	AutoCAD <ul style="list-style-type: none"> • Menu bar • AutoCAD pull down menu • Standard Toolbar • User Coordinate System Icon • Command Line • Command windows 	<ul style="list-style-type: none"> • What is AutoCAD & its purpose
8	<ul style="list-style-type: none"> • Design practice on AutoCAD • Practice on Drawing of various gift items, stationery Item 	<ul style="list-style-type: none"> • Design intervention on new innovative products. • Different aspects of drawing

9-10	Gift items and Jewelry <ul style="list-style-type: none"> • How to make a design of Gift item, & bamboo jewelries/ornaments • Making of Bamboo bags • Making some products like tea coaster, bambobags etc in workshop with the help of machines and hand tools. 	<ul style="list-style-type: none"> • Practice of bamboo ornaments and various gift items • Designing of various Handicraft items • Identification of suitable products as per market demand like tea coaster, bamboo bags, placemat etc. • Make a process lay-out of all individual products
11	<ul style="list-style-type: none"> • Making of Bamboo Models • Practice of making model and mock 	<ul style="list-style-type: none"> • How to make model & mock up • Selection of Marketable Product
12-13	<ul style="list-style-type: none"> • Making of Bamboo Mats and Blinds • Making of Bamboo Mats by using weaving Machine and Manually • Making of Bamboo Blinds 	<ul style="list-style-type: none"> • Process of Weaving Bamboo Mats, • Process of making Bamboo Blinds • Different patterns of Mat and Blind
14	Maintenance of Machines <ul style="list-style-type: none"> • All bamboo pieces and powder is removed from Working points, using supplied tools and equipment, to meet manufacturer's specifications. • Parts are lubricated according to manufacturer's specifications using the recommended lubricants. 	<ul style="list-style-type: none"> • Clean and lubricate of • automatic weaving machine, • manual press machine, • industrial sewing machine & other portable tools.
15-16	Jigs and Fixtures <ul style="list-style-type: none"> • Make various jig & fixtures as per requirement and make different products. • Make various molds for making molded Products. 	<ul style="list-style-type: none"> • What are jig and fixtures? • What are the advantages of Jig & fixtures? When we use Jig & Fixtures? • What are the materials using to make jig & fixtures?
17-18	Finishing Technique <ul style="list-style-type: none"> • Final touch on the products using finishing materials 	<ul style="list-style-type: none"> • Various methods of finishing techniques, • Various finishing materials & there uses.
19	Quality Concern <ul style="list-style-type: none"> • Random samples are taken according to Company sampling procedures. • Samples are measured for specified parameters according to company technical specifications. 	<ul style="list-style-type: none"> • What is Quality concerns • Sample and assess Bamboo production according to company technical specifications. • Range: parameters to be specified.

20	<ul style="list-style-type: none"> • Packaging and Storing • Practice on packaging& storing. 	<ul style="list-style-type: none"> • Concept of Quality assurance. Method of proper packaging of finished products & proper storing.
21	<ul style="list-style-type: none"> • Transportation and Delivery • Survey the Bamboo market. • Arrange the Transport service. • Delivery of finished product 	<ul style="list-style-type: none"> • Knowledge of transportation & marketing. Concept of sales services. • Calculation of cost of finished Bamboo.
22-23	Project Work <ul style="list-style-type: none"> • Visit to various shop and exhibition • Market survey in some cities • participating at various Exhibition, Seminar, Trade fair etc. 	<ul style="list-style-type: none"> • How to behave with customer as entrepreneur • Communication skills that are useful to customer service are identify in accordance with enterprises requirements.(speaking, giving information, active listening)
24-25	Revision	
26	Examination	

List of Tools and Equipments

SL No.	Item	Qty
1.	Combination pliers 200 mm insulated	20 Nos.
2.	Screw driver 100mm, 200mm	20 Nos.
3.	Neon Tester 500 V pencil bit type	20 Nos.
4.	Electrician knife	20 Nos.
5.	Hammer ball pein 0.25 kg	20 Nos.
6.	File round 150mm	20 Nos.
7.	Plier side cutting 200 mm	20 Nos.
8.	Plier round nose 200 mm	20 Nos.
9.	Plier flat nose 150 mm	20 Nos.
10.	Pliers long nose 200 mm	20 Nos.
11.	Hammer chisel 25 mm	20 Nos.
12.	Hammer ball pin 1.0 kg	20 Nos.
13.	Wall Jumper Octagonal 37 mmx 450 mm	20 Nos.
14.	Center punch 100 mm	20 Nos.
15.	Steel measuring tape 20 mts.	20 Sets
16.	Allen keys	20 Sets
17.	Spanner double ended set of G	20 Sets
18.	Adjustable Spanner	20 Nos.
19.	Steel rule 300 mm	20 Nos.
20.	Electric soldering iron 35 w	20 Nos.

21	Electric soldering iron 125 w	20 Nos.
22.	Rubber gloves 5000 v	4 pairs
23.	Multimeter 0-5, 100, 200, 500 mili amperes 0-100-1000 10000 ohms 0-150, 300, 600 VAC/DC	8 Nos.
24.	Tong Tester	1 No.
25.	Megger	1 No.
26.	DC Power Supply 0 V 110V/SA	1 No.
27.	Auto transformer variac 230 V	1 No.
28.	Tweezers	20 Nos.
29.	Crimping Tools	2 sets
30.	Desktop Computer with latest configuration	10 Nos.
31.	UPS WITH 5 KVA CAPACITY	1 No.
32.	LASERPRINTER	1 NO.
33.	Scanner	1 No.
34.	Plotter	1 No.
35.	WINDOWS7 OPERATING SYSTEM	10 N0s.
36.	MS OFFICE 2010	10 Nos.
37.	Latest version of AutoCAD Software	1 0 no.
38.	Common Hacksaw	10
39	Adjustable Hacksaw	10
40.	Hand saw(450mm)	5
41.	Dhau	20
42.	Round Knife	20
43.	Radial Hand splitter (4.8.12.16 blades)	2
44.	Tripura Dhahu	10
45.	Foldable knife	10
46.	Multi purpose Knife	10
47.	Common scissors	20
48.	Handrill	5
49.	Electric Handrill	2
50.	IDC Gauge	10
51.	Steel Rule	20
52.	Folding scale	10
53.	Bamboo Cross cutting machine(Heavy Duty)	1 no.
54.	Bamboo Portable crosscutting m/c	1 no.
55.	Bamboo Radial splitting m/c(Chain type)	1 no.
56.	Bamboo Round Stick Making Machine	1 no.
57.	Bamboo Square Stick Making Machine	1 no.
58.	Bamboo Stick Polishing Machine	1 no.
59.	Bamboo Slicing Machine (Heavy Duty)	1 no.
60.	Bamboo Stick Sizing Machine	1 no.
61.	Bamboo Double Side Cutting Machine, Parallel Splitter	1 no.
62.	Bamboo Two Side Planing cum Sizing Machine	1 no.
63.	Bamboo Four Side Planing Machine	1 no.

64.	Bamboo Treatment Plant	1 no.
65.	Bamboo Dying Tank	1 no.
66.	Bamboo knot removing machine	1 no.
67.	Manual Slivering machine	1 no.
68.	Universal Grinding machine	1 no.
69.	Table grinding machine	1 no.
70.	Machinesaw	1 no.
71.	Machineplanner	1 no.
72.	Lathe machine	1 no.
73.	Hand Gloves	20 nos.
74.	Portable sanding machine	1 no.
75.	Spray Gun	5 nos
76.	Dying Chamber	1 no.
77.	Resign Applicator	1 no.
78.	Glue mixingmachine	1 no.
79.	Drying chamber	1 no.
80.	Hydraulic Press Machine(4' X2') (Maximum pressure required 45 kg/cm ²)	1 no.
81.	DD Saw	1 no.
82.	Steam Boiler with accessories(250 Kg steam/hr.)	1 no.
83.	Spade	10 no.
84.	Steel float	10 no.
85.	Spirit level (30 cmlong)	10 no.
86.	Chisel (25clong hammer)	10 no.
87.	Ladder aluminum(30 m)	1 no.
88.	Bench vice	5 nos
89.	C. Clamp	1 no.
90.	Gloves Canvas	10 no.
91.	Grinding machine with various polishing stones	1 no.
92.	Brush for painting	10 no.
93.	Drawing board with facility ofparallel bar	1 0no.
94.	Mini drafter	20 no.
95.	Erasing shield small size	20 no.
96.	Automaticweaving machine	1 no.
97.	Pneumatic nailer	1 no.
98.	Gas torch	10 no.
99.	Woodturning lathe (6')	2 nos
100.	Table Grinding machine (8'')	2 nos
101.	Industrial Sewing Machine	4 nos
102.	Bamboo Tool kit boxes including 24 nos various kits	20nos
103.	Clamps for holding or tightening the jobs	10nos
104.	Manual ball press machine	4 nos
105.	Sizing machine for window blinds	1 no

106.	Compressor (300lbs)	2 Nos
107.	Manual Slivering Machine	4 Nos.
108.	Automatic Slivering Machine	2 Nos.
109.	Portable Planner	2 nos
110.	Various Mould for making moulded Furniture	Lots
111.	Portable rip saw	4 nos
112.	Mitre saw	2 nos
113.	Universal Planner	1 nos

Furnitures:

Sl. No.	Workshop furniture	Qt
1	Suitable Work Tables	4 Nos.
2	Stools	17 Nos.
3	DiscussionTable	1 Nos.
4	Tool Cabinet	2 nos.
5	Trainees locker with 16 boxes	2 Nos.
6	Firefighting equipment, first aid box etc.	5 Nos.
7	Book Shelf(Glass panel)	1 No.
8	Storage Rack	2 Nos.
9	Storage Shelf	2 Nos.
Sl. No.	Furniture –Computer Lab	Qty
1	Suitable Computer Tables	10 Nos.
2	Computer Chairs	20 Nos
3	Tool Cabinet	2 Nos.
4	Trainees Locker with 16 boxes.	2 Nos.
5	Book Shelf (Glass panel)	1 No.
6	Shoes Rack	2 Nos.
7	Vacuumcleaner	1 No.

LIST OF TRADE COMMITTEE MEMBERS

Sl. No	Names & Designation	Organisation	Remarks
Members of Sector Mentor council			
1	Dr.G.Buvashekarana	AGM, WRI, Trichy - Chairman	Chairman
2	Dr.K.Ashokkumar	AGM, BHEL, Trichy	Member
3	Prof. JyothiMukhopadhyaya	IIT, Ahmedabad	Member
4	B.Pattabhiraman	MD, GB Engineering, Tricgy	Member
5	Dr.Rajeevkumar	IIT, Mandi	Member
6	Dr. Vishalchauhan	IIT, Mandi	Member
7	Shri D.K.Singh	ITI, Kanpur	Member
8	Shri. Navneet Arora	IIT, Roorkee	Member
9	Shri. R. K. Sharma	Head, SDC, JBM Group, Faridabad	Member
10	Shri. Puneet Sinha	Deputy Director, MSME, New Delhi	Member
Mentor			
1	Shri.DeepankarMallick	Director of Training, DGE&T Hq,	Mentor
Members of Core Group			
1	Shri. M Thamizharasan	JDT, CSTARI, Kolkata	Member
2	Sri B K Singha,	Deputy Director, CSTARI, Kolkata	Team Leader
3	Shri. M Kumaravel	DDT, FTI , Bangalore	Member
4	Shri Gopalakrishnan	NIMI, Chennai	Member
5	Sri NipanDeka,	General Manager, CBTC, Assam	Member
6	Sri Pranjit Das,	Principal ITI Guwahati	Member
7	Sri RanjitBorthakur	Principal, ITI, Kokrajhar	Member
8	Sri Moni Das	Proprieter Nitam Bamboo Blinds and Allied Craft,Kshetri, Guwahati	Member
9	Sri Heikrujam Priyokumar Singh	Deputy Manager - Training CBTC, GUWAHATI	Member
10	Sri AnjalGoswami	Deputy Manager CBTC, GUWAHATI	Member
11	Sri Pulak Kr Mandal	Assistant Manager CBTC, GUWAHATI	Member