

Industrial Handicraft

DURATION: 6 Months

Course content

- 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 job specification.**
- 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 layout for production.**
- 8. Techniques of making various bamboo molded furniture.**
- 9. Designing a new product as per market need.**
- 10. Free hand drawing with proper dimension.**
- 11. Estimate the cost of production of identified items.**
- 12. Manufacturing process of various bamboo bags, sweet boxes, phone holders etc using window blinds.**
- 13. Making various small handicraft using bamboo mat board, bamboo laminated board, bamboo particle board etc.**

SL NO	THEORY	PRACTICAL
1	<ul style="list-style-type: none"> • Various bamboo species and their utilization , • Selection of bamboo as per job specification. 	<ul style="list-style-type: none"> • Identification of bamboo as per job requirement at practical field.
2	<ul style="list-style-type: none"> • Selection of products for commercial production. 	<ul style="list-style-type: none"> • Identify the bamboo as per job specification on the practical field. • Making jigs & fixture as per jobs for production.
3	<ul style="list-style-type: none"> • Identification of machineries as per job specification. • Identification of portable hand and power operated tools. • Operation and maintenance of all machines 	<ul style="list-style-type: none"> • Practice on machineries such as automatic weaving machines • Practice on tools such as drill machine, industrial sewing machine etc. • Practice on all types of machineries and hand tools.
4	<ul style="list-style-type: none"> • Identification of suitable products as per market demand like tea coaster, bamboo bags, place mat etc. • Make a process lay-out of all individual products. 	<ul style="list-style-type: none"> • Making some products like tea coaster, bamboo bags etc in workshop with the help of machines and hand tools.
5	<ul style="list-style-type: none"> • Design intervention on new innovative products. • Different aspects of drawing. 	<ul style="list-style-type: none"> • Practice on free hand drawing.
6	<ul style="list-style-type: none"> • Demonstrate knowledge on safety and precautions to be used for the selected machineries and hand tools. 	<ul style="list-style-type: none"> • Basic precautions for the machine operation are identified and followed safety gears to be used while operating the machines are identified and obtained Procedure for emergency stop of the machine is explained • Procedures for registering the complaints with manufacturer about the machine dis-functioning are explained
7	<ul style="list-style-type: none"> • Installation of required machineries. 	<ul style="list-style-type: none"> • Foundation of machines and others aspects like working space and power to be checked and set according to manufacturer's specifications. • The machine is set and adjusted for desired length, width and thickness etc to meet job order specification,
8	Clean and lubricate of automatic weaving machine, manual press machine, industrial sewing machine etc.	All bamboo pieces and powder is removed from Working points, using supplied tools and equipment, to meet manufacturer's

		<p>specifications.</p> <p>Parts are lubricated according to manufacturer's specifications using the recommended lubricants.</p> <p>All maintenance procedures comply with company safety requirements.</p>
9	<p>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?</p>	<ul style="list-style-type: none"> • Make various jig & fixtures as per requirement and make different products. • Make various molds for making molded furniture.
10	<p>Various methods of finishing techniques, Various finishing materials & there uses</p>	<p>Final touch on the products using finishing materials.</p>
11	<p>Sample and assess Bamboo production according to company technical specifications.</p> <p>Range: parameters to be specified.</p>	<p>Random samples are taken according to Company sampling procedures.</p> <p>Samples are measured for specified parameters according to company technical specifications.</p>
12	<p>Communication skills that are useful to customer service are identify in accordance with enterprises requirements.(speaking, giving information, active listening)</p>	<p>Market survey in some cities, participating at various Exhibition, Seminar, Trade fair etc.</p>

List of tools and equipments for Industrial Handicraft

Sl No	Name of the machines	Quantity	Approx-price
1	Wood turning lathe (6')	2 nos	30,000.00
2	Stand Drill machine with carbide drill sets (12 – 20 mm)	4 nos	60,000.00
3	Table Grinding machine (8")	2 nos	10,000.00

4	Automatic Weaving Machine	2 nos	5,00,000.00
5	Industrial Sewing Machine	4 nos	3,00,000.00
6	Bamboo Tool kit boxes including 24 nos various kits	16 nos	80,000.00
7	Table Vice	4 nos	4,000.00
8	Clamps for holding or tightening the jobs	16 nos	10,000.00
9	Manual ball press machine	4 nos	1,50,000.00
10	Sizing machine for window blinds	1 no	50,000.00
11	Pneumatic pin gun	4 nos	50,000.00
12	Compressor (300lbs)	2 Nos	50,000.00
13	Hand drill machine 6mm	8 Nos.	30,000.00
14	Portable sanding machine	4 Nos	60,000.00
15	Spray Gun	6 Nos	20,000.00
16	Gas Torch	8 Nos	20,000.00
17	Air Gun/Blow Gun	6 Nos	15,000.00
18	Manual Slivering Machine	4 Nos.	28,000.00
19	Automatic Slivering Machine	2 Nos.	1,20,000.00
20	Portable Planner	2 nos	30,000.00
21	Various Mould for making moulded Furniture	Lots	1,00,000.00
22	Portable rip saw	4 nos	60,000.00
23	Mitre saw	2 nos	70,000.00
24	Universal Planner	1 nos	50,000.00

List of items included in a Bamboo Tool Kits Box

Sl. No	Particulars	Quantity
1	Adjustable Hacksaw	1
2	Dao	1
3	Fine Knife	1
4	Hammer 200gm,100gm	1
5	Hand drill Machine	1
6	Nose pliers	1
7	Half Round Chisel, ¼” ½”& 1”	3
8	Flat Chisel – ¼ inch, ½ inch & 1”	3
9	Out side calliper	1
10	Inside calliper	1
11	Steel Rule	1
12	Wood Planner – 10”	1
13	Half Round File 8”	1
14	Flat File-8”	1
15	Combination Stone	1
16	Drill bit Set	1
17	Blow Lamp 2lits Capacity	1
18	Mini Hacksaw	1
19	Screw Driver 8”,	1
20	Steel Rule 12”	1
21	Pliers	1
22	Tool Box	1

Industrial Processing of Bamboo

DURATION: 6 Months

Course content

- 14. Selection of appropriate Bamboo species for different industrial processing and utilization.**
- 15. Perform Treatment and preservation of Bamboo for different utilization.**
- 16. Explain the types and Perform the various functions of Portable hand operated machines & power operated tools for primary processing of Bamboo.**
- 17. Make familiar about the different types of industrial products and their uses.**
- 18. Make familiar about the various bamboo processing machineries and their utilization on various fields.**
- 19. Make various jigs and fixtures for making different moulded furniture as per design.**
- 20. Manufacturing process of mechanized Bamboo curtains and its various products.**
- 21. Manufacturing Bamboo mat board and various products from the mat board**
- 22. Details knowledge about the Bamboo flooring board making process.**
- 23. Safe operation and maintenance of Bamboo processing machines.**
- 24. checking and accounting for the specified quality of production for each machine**
- 25. recognition of faults that have occurred during Bamboo processing;**
- 26. describing the process of accounting for and/or making good on faulty production**

SL NO	THEORY	PRACTICAL
1	Demonstrate knowledge of the range of bamboo processing machines in the workplace as per job requirement.	Bamboo industrial processing machines for making bamboo slivers, strips and sticks, etc. are recognised by their functioning. Sequencing of these machines in the assembly line is described in terms of the bamboo processing job requirement
2	Which bamboo species is suitable for what products? Such that Bambusa tulda, Bambusa bambos, and Dendrocalamus hamiltonii are suitable for making flooring board, window blinds etc but Melocanna baccifera is not applicable.	Identify the bamboo as per job specification On the practical field.
3	Selection of treatment procedure which is best for the job specification. What is carbonizing process? What are the advantages? How do you make carbonizing?	Practice on selected treatment process such that treatment with the help of Borax and boric Acid. Practice on boiler make different color like coffee, dark brown, light brown etc, on strips with the help of carbonizing process.
4	Recognition of the full range of the industry's Bamboo Industrial products like bamboo laminated board, molding furniture, window curtains, dap board, mat board, etc.	Making some products on the workshop and prepare processes lay out of Bamboo flooring board, molded furniture and bamboo curtains etc.
5	Selection of both primary and secondary processing machines for the manufacturing specific bamboo product.	Make any product on the workshop to utilizing particular machine which is applicable.
6	Demonstrate knowledge on safety and precautions to be used for the bamboo processing Machine	Basic precautions for the machine operation are identified and followed Safety gears to be used while operating the machines are identified and obtained Procedure for emergency stop of the machine is explained Procedures for registering the complaints with manufacturer about the machine dis-functioning are explained
7	Set up and adjust a Bamboo Processing Machines.	Worn and damaged blades/other parts are checked for replacement according to manufacturer's specifications. Power Settings and other parts are checked and set according to manufacturer's specifications. The machine is set and adjusted for desired length, width and thickness etc to meet job order specification,

		The machine is connected as per the manufacturer's specifications, and blades, cutters are set according to job order.
8	Clean and lubricate the industrial Bamboo Processing Machine.	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. All maintenance procedures comply with company safety requirements.
9	Demonstrate knowledge of machine-related faults in different Bamboo Processing machines. Range: faults arising from mechanical damage, defects, wear, or operator error on Bamboo machines in the workplace	Machine-related faults in splits fabric are described in terms of those arising out of mechanical damage, defects, wear, and/or operator error, shown by sample, and their correction and the effects of the faults on the knitted production are explained. Range: incorrect quality, blades positioning, sharpness of blades, other faults according to frequent work-related experience
10	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?	Make various jig & fixtures as per requirement and make different products.
11	Various methods of finishing techniques, Various finishing materials & there uses	Final touch on the products using finishing materials.
12	Sample and assess Bamboo production according to company technical specifications. Range: parameters to be specified.	Random samples are taken according to company sampling procedures. Samples are measured for specified parameters according to company technical specifications.
13	Communication skills that are useful to customer service are identify in accordance with enterprises requirements.(speaking, giving information, active listening)	Market survey in some cities, participating at various Exhibition, Seminar, Trade fair etc.

List of Machineries for Industrial Processing of Bamboo

SI No	Item/Specification	Quantity	Approx-price/Rs
1	Pressure Impregnation Plant for Bamboo Treatment For 3'-6"(1070mm) DIA X 22'-0" (6700mm) long	1	10 Lakhs
2.	BAMBOO TREATMENT PLANT Outside dimensions of the Treatment Plant : 9'x2'x3' Maximum temperature for bamboo seasoning unit : 120 degree C. Chemical recommended : Boric/Borax acid Metal Sheet (thickness 2mm) Stainless Steel	1 No.	30,0000.00
3.	BAMBOO DYEING TANK Dimension : 9'x2'x2' Metal (Thickness 2mm) : Mild Steel	1 No.	30,000.00
4.	BAMBOO RESIN APPLICATOR : 4'X4' Main Material (mild steel) : 2 mm Main leak proof tank (1.3m X 1.4m X 1.5m) 1 No. gate valve Hand operated Screw Thread for tank tilting	1 No.	200,000.00
5.	GLUE MIXING MACHINE Capacity : 150 Ltr Power consumption : 2 H.P & 1440 rpm Materials : Stainless Steel	1 No.	80,000.00
6.	D.D. SAW MACHINE (TRIMER) : 4'X4' Power :2 nos 5 H.P 2900R.P.M	1 No.	1,50,000.00
7.	Glue Squeezer cum Spreader machine 1400mm (54") Heavy Duty rubber roller. Complete with 2 H.P 1440 R.P.M motor and reduction gear. The machine has also stain less steel tray for squeezing out excess resin from bamboo mat	1 No	2,00,000.00
8.	BAMBOO MAT BOARD HOT PRESS Capacity : 400 Tons		10,00,000.00

	Working Pressure : 20 kg/cm² Maximum Pressure : 25 kg/cm² Heating of plates size : 1350 X 1350 mm No. of day light : 2 nos Heating plates : 3 nos Clearance of day light : 75mm No. of RAM : 4 Nos RAM Diameter : 220mm Motor Required : 10 H.P Hydraulic Power pack : manual	1 No.	
9.	THERMIC FLUD HEATER Heat Output Kcal/hr : 2 lakhs Maximum working Tem : 300 Degree centregate Thermal Efficiency :74+ 2% Fuel consumption (wood / Bamboo) : 35 Kgs/hr (Gcv of fuel 3000 Kcal/Kg) Electric Supply : 440v, +3% 50 HZ, 3 Phase AC 4 Wire System	1 No.	5,00,000.00
10.	BAMBOO DRYING CHAMBER Drying chamber of 6'X 9' X 8' equipped with power full cross circulation reversible axial flow fans. 2 sets of finned type coils, 3 nos of reversible flow fans 3 nos of hushing with shaft complete 1 set of partition frame 3 nos of top damper 3 nos of 9"	1 no	2,00,000.00
11	Spares parts of the machines (as required each machine)	1 no	2,00,000.00
12	Boiler Accessories and ducting etc	1 no	2,00,000.00
13	Machineries for Moulded Furniture	4 nos	5,00,000.00

Innovative Bamboo housing and construction

DURATION: 6 Months

Course content

- 1. Demonstrate knowledge of and carry out health and safety procedures for a building construction site**
- 2. Demonstrate knowledge of bamboo tools and equipment used on construction sites**
- 3. Reading and understanding construction drawing**
- 4. Demonstrate knowledge of bamboo used in construction**
- 5. Demonstrate knowledge of preliminary work needed for construction (work plan)**
- 6. Apply plans and specifications to calculate quantities for a building construction projects (Bills of Quantities – BoQ)**
- 7. Demonstrate knowledge for a preparation of plinth and sub structure for bamboo construction**
- 8. Demonstrate knowledge of erecting the basic bamboo skeleton structure**
- 9. Demonstrate knowledge of wall construction, exterior and interior finishing**
- 10. Demonstrate knowledge of finishing aspects in the bamboo housing construction**

Theory	Practical
<p>Demonstrate knowledge about health and safety procedures for a building construction site.</p>	<p>Personal protective equipment (PPE) is identified and its correct use is described (helmet, body gear, shoes) Methods of hazard identification are explained Range: hazards to self, hazards to others. Accident notification is explained Workplace emergency procedures are explained</p>
<p>Carry out safe working practices on construction sites.</p>	<p>Site specific safety plan is obtained and followed in accordance with safe working practices. Hazards are identified and managed in accordance with the site specific safety plan. Construction practices on site are carried out without injury to operatives and the public, or damage to the building under construction, materials, tools, and items of plant and equipment. Construction machinery is guarded in accordance with the site specific safety plan</p>
<p>Apply tools and equipment used on construction sites. Range: metric tape, plumb line, saws, chisel, hand drill, surface planner, trowel, tumbler, shovel.</p>	<p>1.1 Demonstrate knowledge of the use of bamboo tools and machinery in terms of work operations to be completed. Range: set up, guarding, cleanliness of tools and machinery, and work area.</p> <p>1.2. Care and maintenance of bamboo tools and machinery is described as recommended by the manufacturer’s instructions. Range: blades, knives, cutting edges, adjustment, cleaning, power source, guarding.</p> <p>1.3 Use of bamboo machinery is described in terms of health and safety requirements and site specific safety plan. Range: includes but is not limited to – identification of hazards and risk, prevention of injury to users and others; damage to materials and machinery</p>
<p>Interpret construction drawings.</p>	<p>1.1 Drawings are interpreted in terms of the location of work-site. Range: floor plans, site plans, elevation, section, approach road, drainage, underground services, surfacings, in-ground structures, etc.</p> <p>1.2 Drawings are interpreted in terms of specified survey set-out requirements. Range: scope of work, survey control, as-builts, time scale, reporting, notification, special project needs, tolerances, responsibilities, information projected by others, legal requirements</p>

Understanding structural concepts of a bamboo building	<p>Bamboo construction is identified in terms of its structural features</p> <p>Range: bamboo used in columns, bamboo used in beams, bamboo used for truss, bamboo used in walling, etc.</p> <p>Understanding the weaknesses and the precautionary measures for bamboo used in building construction</p>
Identify bamboos and select for use in building construction	<p>Bamboos are described in terms of their species, age, maturity and appearance</p> <p>Bamboo is selected on the basis of its dimensional characteristics for different uses based on straightness, wall thickness, diameter, length,</p> <p>Range: selection for use in columns, truss, walls, etc</p>
Describe features of bamboo seasoning.	<p>Terms are defined in relation to bamboo seasoning.</p> <p>Range: fibre saturation point, equilibrium moisture content moisture content.</p> <p>Methods used to determine moisture content of bamboo are described.</p> <p>Range: sun dry, oven dry method, moisture meter.</p> <p>The seasoning of bamboo is explained in terms of the method used.</p> <p>Range: stacking methods; seasoning methods including – water seasoning, smoke treatment, chemical treatments, brochure treatment.</p>
Describe how to set up temporary construction site facilities.	<p>Required actions are described in relation to setting up a building site.</p> <p>Range: includes but is not limited to – provision of access, installation of water, power, sewage and telephone services, set up of temporary site accommodation, ablutions, storage for plant and materials, security, measures to protect adjoining properties and trees, measures to protect site personnel and the public.</p>
Describe time activity programming for a residential building.	<p>A time activity programme is explained in terms of work activity and job progress.</p> <p>A time activity programme is prepared to meet job requirements.</p>
Range: start date, finish date, operations dates, subcontractors dates, materials delivery dates, inspections.	
Determine type, quality and quantity of materials.	<p>Material type and quality is determined from plans, job specifications and schedules.</p> <p>Schedules of quantities are calculated from plans, contract specifications and schedules.</p> <p>Materials to order are listed in accordance with working measurements.</p>

<p>Process and prepare the bamboo for the pole structure</p> <p>Range: cutting, sizing, knot removing, treating, etc.</p>	<p>Select and segregate bamboo to be used as pole structure</p>
<p>Outline the principles of installation of other joinery like brackets, eaves boards, grills etc.</p>	<p>The installation and fixing of joinery units are described in accordance with given working drawings.</p> <p>Range: includes but is not limited to – cabinetry, bench tops, shelving.</p> <p>Hanging and installation of interior doors are described in accordance with given working drawings.</p> <p>Temporary protection for interior joinery units is described in accordance with work site practices.</p> <p>Procedures for maintaining health and safety requirements when installing interior joinery are described.</p> <p>Range: includes but is not limited to – work methods, plant, and equipment, identification of hazards, injury prevention and personal protection.</p>
<p>Outline the principles of the wall clustering on bamboo panels</p>	<p>1.1 Components of exterior bamboo and aluminium windows and doors are described.</p> <p>Range: jambs, sills, heads, mullions, transom, sashes.</p> <p>1.2 Weatherproofing principles for the installation for exterior bamboo windows and doors are described.</p> <p>Range: includes but is not limited to – grooves, throatiness, drip grooves and flashings.</p> <p>1.3 Weatherproofing principles for the installation of aluminium windows and doors are described.</p> <p>Range: includes but are not limited to – head, jamb and sill flashings.</p> <p>1.4 Temporary protection for exterior joinery is described in accordance with work site practice.</p> <p>1.5 Procedures for maintaining health and safety requirements when installing exterior joinery are described.</p> <p>Range: includes but is not limited to – work methods, plant, and equipment, identification of hazards, injury prevention and personal protection.</p>

List of tools and equipments for Innovative Bamboo housing and construction

SL No	Items /specification	Quantity proposed for a batch of 16 trainees	Approx-price/Rs.
1	Steel Tape (5m)	16 nos	1600.00
2	Steel tape (15m)	8 nos	4000.00
3	Masons Square 300 X 600	8 nos	3000.00
4	Bevel	16 nos	3000.00
5	Shovel	16 nos	3000.00
6	Pan (MS)	16 nos	10,000.00
7	Spirit Level	8 nos	5000.00
8	Straight Edge	8 nos	4000.00
9	Water Tube(6m)	8 nos	2000.00
10	Bucket (5ltr & 10ltr)	8 nos	2000.00
11	Trowel (required shape and Size)	8 nos	5000.00
12	Hand Gloves	12 dozens	5000.00
13	Hand saw	24 nos	5000.00
14	Hand Drill Machine	16 Nos	10,000.00
15	Dao	16 nos	5,000.00
16	Half Round Chisel, ½” 1”	32 nos	10,000.00
17	Flat Chisel ½”,1”	32 nos	8,000.00
18	Blow lamp	16 nos	10,000.00
19	Flat File, 8”,10”	32 nos	15000,00
20	Half Round file 8”,10”	32 nos	15,000.00
21	Water Level	2 nos	1000.00
22	Carbide Drill Bit Set	2 nos	20,000.00
23	Hand Planner	16 nos	3,000.00
24	Electrical Hand Drill Machine	6 Nos	30,000.00
25	Drill Bit Set	10 nos	20,000.00
26	Mitre Saw	2 nos	30,000.00