

Syllabus For Two Treadle Handloom Weaver(Solar power)

Course Name	Two Treadle Handloom Weaver (Solar power)
Sector	TEXTILES & HANDLOOMS
Course Code	TXT/2024/TTHW/390
Sub-sector	Handloom sector
Level	3
Occupation	Two Treadle Handloom Weaver
Job Description	A two treadle handloom weaver is the one who weaves various types of fabrics by hand using a handloom equipped with two treadles & two heald shafts. The weaver will weave basic structures like Plain and its derivatives, using different kinds of yarns as per requirement. The weaver should also know how to attach solar power drive to the loom.
Course Duration	Total Duration 390 Hours (T- 90, P- 180 , OJT-60 and ES-60)
Trainees' Entry Qualification	Grade 10 OR Grade 8 with two year of (NTC/ NAC) after 8th OR Grade 8 pass and pursuing continuous schooling in regular school with vocational subject OR 8th grade pass with 2 yrs relevant experience OR Previous relevant Qualification of NSQF Level 2 with one year experience OR Previous relevant Qualification of NSQF Level 2.5 with 6 months experience
Trainers Qualification	B. Tech in Textile Technology/ Handloom & Textile Technology / Textile Engineering from AICTE/UGC recognized Engineering College/ university with one-year experience in the relevant field. OR 03 years Diploma in Handloom & Textile / Textile Technology/ Textile Engineering from AICTE recognized College / Institute with two years experience in the relevant field.

Structure of Course:

Module No.	Module name	Outcome	Theory (Hrs)	Practical (Hrs)	OJT (Hrs.)	Total (Hrs) [Multiple of 30]
1	Introduction to Handloom Weaving and Roles & Responsibilities	Demonstrate the objectives of Handloom weaving and identify the roles & responsibilities of the weaver.	20	40		60
2	Pre-weaving tasks and Handloom operation	Perform the pre-weaving activities and weave fabrics by operating the Handloom.	30	60		90
3	Solar powered drive operation and Maintenance	Attach & operate solar power system and ensure good maintenance of the system	20	40		60
4	Maintain occupational safety hazards at work place	Apply safe working practices at work place.	10	20		30
5	Workplace communication strategies	Demonstrate a comprehensive effective workplace communication strategies.	10	20		30
6	OJT	Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).	-	-	60	60
7	Employability Skills	As per guided curriculum	60	-		60
TOTAL			150	180	60	390

SYLLABUS:**Module No. 1: Introduction to Handloom Weaving and Roles & Responsibilities.**

Outcome : Demonstrate the objectives of Handloom weaving and identify the roles & responsibilities of the weaver.

Theory Content:

- Definition & objectives of Weaving.
- Handloom Industry and its significance in domestic and global markets.
- Principles of fabric formation in normal two treadle handloom.
- Basic weaving terms such as **Warp, weft, shed, shuttle, end, pick, EPI, PPI, gaiting, mending, shedding, picking, beat-up, let-off, take-up** etc.
- Brief on various motions of loom.
- Introduction to different woven fabric structures: **Plain, Matt, Huck-a-back, Hopsack, Honey comb** etc.
- Roles and responsibility of the Two Treadle Handloom Weaver.
- Sequences of work in Two Treadle Handloom.

Practical Content:

- Identify motions of Two Treadle Handloom .
- Demonstrate Handloom weaving operation.
- Drawing of the schematic diagram of path of yarns inside Two Treadle Handloom.
- Make sure the required amount of warp sheet is prepared.
- Performing beaming process.
- Demonstrate the procedures of fabric formation in Two Treadle Handloom.
- Identify and inspect the tools and equipment.
- Become familiar in faults identification.
- Handing over/taking over documentation preparation.

Classroom Aids:

Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook, Pen pencil.

Tools & Equipment needed : A Two Treadle Handloom, Creel, Warping drum, Yarns, Needles, Apron, head cap, shoe, Work method posters, pictures, videos. Pen, pencil, Marker, Drawing hook, Magnifying glass, Scissors etc.

Module No. 2: Pre-weaving tasks and Handloom operation

Outcome: Perform the pre-weaving activities and weave fabrics by operating the Handloom.

Theory Content:

- Objectives of Handloom weaving process.
- Description of different components of a Two Treadle Handloom.
- Functions of the parts of Two Treadle Handloom.

- Principles of fabric formation on a Handloom .
- Types of yarn and fabric.
- Process flow & Pre-weaving activities before starting weaving.
- Brief on **Winding, Warping, Sizing**.
- Process parameters effecting performance of Two Treadle Handloom such as **Warp count, Weft count, EPI, PPI, Tension of warp, no. of ends per dent, reed width** etc.

Practical Content:

- Identify different components of a Two Treadle Handloom and demonstration of their functions.
- Demonstrate functions of **Shuttle, Treadle, Reed, Cloth beam, Warp beam, Picker, Heald shaft, Lease rods, Sley, Temple, Harness, Breast beam, Take up Roll etc.** of the Handloom.
- Change different settings of the Handloom and notice the effects on EPI & PPI of woven fabric.
- Demonstrate the Pre-weaving activities of Handloom weaving namely- **Preparation of Warp and weft, filling pirns, loading of warp beam onto handloom, setting the tension of the rollers, drawing of warps through the healds, drafting & denting, connecting the yarns with cloth beam.**
- Checking the starting position of loom parts like heald shafts, reed, shuttle, warp beam and cloth beam.
- Perform primary, secondary and auxiliary weaving operations on the loom.
- Weaving technique of the fabric as per design specifications.
- Maintaining required thread tension during weaving.
- Changing of pirn and shuttle as per the design.
- Use of temples or wooden staves.
- Adjusting the 'let-off' and 'take-up' to maintain tension.
- Mending techniques of warp and weft breaks.
- Doffing process of woven fabric and store the cloth roller.
- Demonstrate the techniques to make adjustments to ensure the quality of the hand-woven fabric.
- Ensure safety during loom operation.
- Adjust loom settings to meet the production/quality requirements.

Classroom Aids:

Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook, Pen pencil.

Tools & Equipment needed: A Two Treadle Handloom, Creel, Warping drum, Yarns, Needles, Apron, head cap, shoe, Work method posters, pictures, videos. Pen, pencil, Marker, Drawing hook, Magnifying glass, Scissors etc.

Module No. 3: Solar powered drive operation and Maintenance

Outcome : Attach & operate solar power system and ensure good maintenance of the system

Theory Content:

- Working of solar power components such as Batteries, Charge controller, Solar panels etc.
- The operation of solar power system and their main components.
- Cleaning procedures of solar power system components.
- Brief on Maintenance activities of solar power system machine parts.
- Various maintenance activities of Two Treadle Handloom.
- Safety guidelines to be followed.

Practical Content:

- Preparation of Solar powered Handloom for operation.
- Illustrate operating procedure of the solar power attachment such as - Switching on the main motor and start the production, Checking of light indicators and display panel for voltage fluctuation, Checking of Electrolyte level of battery and refilling the electrolyte, Cleaning the battery, Cleaning the inverter, Battery Charger and Charge controller etc.
- Demonstrate the Inspection procedure of the cleanliness of panel boxes.
- Use PPE while refilling Distilled water and cleaning the machine.
- Use of the right tools such as cloth, brush for to various parts of the solar power system.
- Demonstrate the cleaning operation of the handloom properly.

Classroom Aids:

Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook, Pen pencil.

Tools & Equipment needed: A Two Treadle Handloom, Creel, Warping drum, Yarns, Needles, **Batteries, Charge controller, Solar panels**, Apron, head cap, shoe, **PPE**, Work method posters, pictures, videos. Pen, pencil, Marker, Drawing hook, Magnifying glass, Scissors etc.

Module No. 4: Maintain occupational safety hazards at work place

Outcome : Apply safe working practices at work place

Theory Content:

- Significance of routine cleaning activities of machine maintenance
- Identifying potential hazards associated with a lack of regular cleaning on tools, machines and work areas.
- Types of cleaning agents and tools
- Introduction of Occupational safety
- Overview of relevant occupational safety regulations and standards
- The responsibility of technician in compliance with safety guidelines
- Identification of Occupational safety hazards
- Identification of common hazards in in the machine
- Describe types of hazards
- Application of PPE (Personal protective equipment)
- Selection and use of PPE
- Safe work practices with electrical systems
- Applications of electrical tools
- Describe the importance of immediate response during emergencies
- Fire prevention measures and firefighting equipment's

Practical Content:

- Demonstration of cleaning techniques
- Create a check list for routine cleaning tasks and their frequency
- Demonstrate the use protective clothing/equipment for specific tasks and work conditions
- Identify PPE application and its maintenance procedure
- Demonstrate the correct use of safety glasses, gloves and hearing protection
- Simulate an emergency scenario require the use of PPE
- Identify electrical hazards (power supply and points, loose and naked cables and wires, equipment malfunctions, etc.)
- Apply electrical precautions like insulated clothing, adequate equipment insulation, use dry work area etc.

- Identify safety features and emergency stop locations
- Present proper method of rescue techniques applied during fire hazard and other accidental situation.

Classroom Aids:

Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook

Tools, Equipment and Other Requirements:

Protective Gloves, Head Caps, Safety Goggles, Safety Boots, Mouth Masks, coats and aprons; ear plugs or muffs; eye and facial protection; head-wear; lifting assistance;

Module No. 5: Workplace communication strategies

Outcome : Demonstrate a comprehensive effective workplace communication strategies

Theory Content:

- Explain purpose or common goals of each member in a group of willing to work toward. Members feel that they played a role in determining these goals and the methods used to achieve them.
- Describe the task between each members in group, but also with its own processes and operating procedures.
- Maintain Communication is clear and direct manner.
- Interpret machine performance data and metrics
- Explain key indicators of machine health and efficiency
- Establish clear reporting procedures for machine running and performance
- Generate machine performance reports and sharing them with the team
- Discuss supervision policy as a leader who can bring the group together and build an environment in which the team can work together effectively.

Practical Content:

- Demonstrate the purpose or common goals of each member in a group of willing to work toward. Members feel that they played a role in determining these goals and the methods used to achieve them.
- Identify the task between each members in group, but also with its own processes and operating procedures. The group periodically evaluates its performance.
- Exhibit the accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required.
- Apply Communication is clear and direct manner.
- Apply good communication environmental practices in workplace.
- Simulate/role play of ethical dilemmas in the workplace
- Illustrate organizational policies and procedures

Classroom Aids:

Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook

Tools, Equipment and Other Requirements:

Protective Gloves, Head Caps, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual, communication tools, communication manual, On-task Communication, Instant Chats , Video Conferencing, Voice Calls, Audio Recording, Discussion Forums, Instant File Sharing, External Communication

Module No. 6: OJT

Outcome: Work in real job situation with special emphasis on basic safety and hazards in this domain

Practical Content:

Assessor will check report prepared for this component of Practical training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor for **60 Hours**.)

Module No. 7: : Employability Skills (60 Hrs)**Introduction to Employability Skills**

Duration: 2 Hours

After completing this programme, participants will be able to:

1. Discuss the Employability Skills required for jobs in various industries
2. List different learning and employability related GOI and private portals and their usage

Constitutional values - Citizenship

Duration: 2 Hours

3. Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen
4. Show how to practice different environmentally sustainable practices.

Becoming a Professional in the 21st Century

Duration: 3 Hours

5. Discuss importance of relevant 21st century skills.
6. Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life.
7. Describe the benefits of continuous learning.

Basic English Skills

Duration: 10 Hours

8. Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone
9. Read and interpret text written in basic English
10. Write a short note/paragraph / letter/e -mail using basic English

Career Development & Goal Setting

Duration: 2 Hours

11. Create a career development plan with well-defined short- and long-term goals

Communication Skills

Duration: 5 Hours

12. Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.

13. Explain the importance of active listening for effective communication
14. Discuss the significance of working collaboratively with others in a team

Diversity & Inclusion

Duration: 2 Hour

15. Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD
16. Discuss the significance of escalating sexual harassment issues as per POSH act.

Financial and Legal Literacy

Duration: 5 Hours

17. Outline the importance of selecting the right financial institution, product, and service
18. Demonstrate how to carry out offline and online financial transactions, safely and securely
19. List the common components of salary and compute income, expenditure, taxes, investments etc.
20. Discuss the legal rights, laws, and aids

Essential Digital Skills

Duration: 10 Hours

21. Describe the role of digital technology in today's life
22. Demonstrate how to operate digital devices and use the associated applications and features, safely and securely
23. Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely
24. Create sample word documents, excel sheets and presentations using basic features
25. utilize virtual collaboration tools to work effectively

Entrepreneurship

Duration: 6 Hours

26. Explain the types of entrepreneurship and enterprises
27. Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan
28. Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement
29. Create a sample business plan, for the selected business opportunity

Customer Service

Duration: 4 Hours

30. Describe the significance of analyzing different types and needs of customers
31. Explain the significance of identifying customer needs and responding to them in a professional manner.
32. Discuss the significance of maintaining hygiene and dressing appropriately

Getting Ready for apprenticeship & Jobs

Duration: 9 Hours

33. Create a professional Curriculum Vitae (CV)
34. Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively
35. Discuss the significance of maintaining hygiene and confidence during an interview
36. Perform a mock interview
37. List the steps for searching and registering for apprenticeship opportunities

Learning Outcome – Assessment Criteria

Module No.	Outcome	Assessment Criteria
1	Demonstrate the objectives of Handloom weaving and identify the roles & responsibilities of the weaver.	<p>After completion of this module students will be able to:</p> <ol style="list-style-type: none"> 1.1. Demonstrate the Principles of Handloom weaving process. 1.2. Perform different processes involved in Two Treadle Handloom. 1.3. Explain terms such as Warp, weft, shed, shuttle, end, pick, EPI, PPI, gaiting, mending, shedding, picking, beat-up, let-off, take-up etc. 1.4. Identify the role and responsibility of the Two Treadle Handloom Weaver. 1.5. Execute the process flow of Handloom Weaving. 1.6. Demonstrate various motions of loom. 1.7. Make sure the required amount of warp sheet & weft is prepared. 1.8. Inspect the tools and equipment. 1.9. Identify faults & perform remedies.
2	Perform the pre-weaving activities and weave fabrics by operating the Handloom.	<p>After completion of this module students will be able to:</p> <ol style="list-style-type: none"> 2.1. Identify different components of a Two Treadle Handloom. 2.2. Perform fabric weaving on handloom. 2.3. Explain process parameters such as Warp count, Weft count, EPI, PPI, Tension of warp, no. of ends per dent, reed width etc. 2.4. Demonstrate functions of Shuttle, Treadle, Reed, Cloth beam, Warp beam, Picker, Heald shaft, Lease rods, Sley, Temple, Harness, Breast beam, Take up Roll etc. 2.5. Perform Pre-weaving activities of Handloom weaving namely- Winding, Warping, Sizing, loading of warp beam onto handloom, setting the tension of the rollers, drafting & denting, connecting the yarns with cloth beam. 2.6. Check the starting position of the two treadle handloom parts. 2.7. Execute the primary, secondary and auxiliary weaving operations on the Handloom. 2.8. Use raw materials as per the specifications. 2.9. Maintain required weft tension during the weaving operation. 2.10. Perform pirn and shuttle changes as per the design required. 2.11. Maintain fabric width using temples. 2.12. Maintain constant warp tension during weaving

Module No.	Outcome	Assessment Criteria
		<p>by adjusting the 'let-off' and 'take-up'.</p> <p>2.13. Use techniques to make adjustments to ensure the fabric matches the specification.</p> <p>2.14. Identify the broken warp ends.</p> <p>2.15. Fix the drawn broken end outside the fell of cloth.</p>
3	Attach & operate solar power system and ensure good maintenance of the system.	<p>After completion of this module students will be able to:</p> <p>3.1. Demonstrate the working of solar power components such as Batteries, Charge controller, Solar panels etc.</p> <p>3.2. Switch on the main motor and start the production.</p> <p>3.3. Check the light indicators and display panel for voltage fluctuation.</p> <p>3.4. Check the Electrolyte level of battery and refill the electrolyte.</p> <p>3.5. Clean the battery, inverter, battery Charger and Charge controller.</p> <p>3.6. Inspect the cleanliness of panel boxes.</p> <p>3.7. Use the right tools such as cloth, brush for to various parts of the solar power system.</p> <p>3.8. Demonstrate the cleaning operation of the handloom properly.</p>
4	Apply safe working practices at work place	<p>After completion of this module students will be able to:</p> <p>4.1 Demonstrate of effective cleaning techniques</p> <p>4.2 Execute machine specific cleaning procedures</p> <p>4.3 Create a checklist for routine cleaning tasks</p> <p>4.4 Demonstrate the use of protective clothing/equipment for the specific tasks and work conditions</p> <p>4.5 Describe the importance of PPE kit</p> <p>4.6 Demonstrate the correct use of safety gear.</p> <p>4.7 Identify electrical hazards, including power supply issues, loose cables and equipment malfunctioning</p> <p>4.8 Detect health hazards (such as untreated injuries and contagious illness/ zoonotic diseases).</p> <p>4.9 Maintain Fire safety and prevention of fire hazards in workplace [fire extinguishers, fire Alarm, fire exits]</p> <p>4.10 Ensure use of general health and safety equipment and materials in the workplace first aid equipment</p>
5	Demonstrate a comprehensive effective workplace communication strategies	<p>After completion of this module students will be able to:</p> <p>5.1 Demonstrate the purpose of each team member and their involvement in determining goals</p> <p>5.2 Identify tasks between team members and their own</p>

Module No.	Outcome	Assessment Criteria
		processes 5.3 Apply effective communication strategies in a practical context 5.4 Exhibit enterprise ethical standards in workplace interactions 5.5 Apply good communication environmental practices in practical workplace 5.6 Simulate/Role play ethical dilemmas in the work place 5.7 Illustrate familiarity with relevant industry standards and regulations. 5.8 Explain the organizational policies and procedures
6	OJT	Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).
7	Employability Skill	As per guided curriculum

List of Tools, Equipment & materials needed for 30 Trainees (Practical)

SI No	Items Name	Specification	Qty
1	Two Treadle Handloom		2
2	Creel		2
3	Warping drum		2
4	Yarns		As required
5	Needles		As required
6	Batteries		As required
7	Charge controller		As required
8	Solar panels		As required
9	Wires		As required
10	PPE		30
11	Apron		30
12	Head cap		30
13	Shoe		30
14	Hand gloves		30
15	Yarn Drawing hook		30
16	Magnifying glass		30
17	Scissors		5
18	Meterage devices		5
19	Measuring scales, Inch Tape		10
20	Nose mask		30

SI No	Items Name	Specification	Qty
21	Fabric markers		5
22	Fire extinguishers		2
23	Fire Alarm		2
24	First aid equipment		5

Marks Distribution

Outcome	Outcome Code	Total Th marks	Total Pr marks	Total OJT marks
Demonstrate the objectives of Handloom weaving and identify the roles & responsibilities of the weaver.	TXT/3721/OC1	30	130	0
Perform the pre-weaving activities and weave fabrics by operating the Handloom.	TXT/3721/OC2	50	150	0
Attach & operate solar power system and ensure good maintenance of the system	TXT/3721/OC3	30	130	0
Apply safe working practices at work place.	TXT/3721/OC4	20	120	0
Demonstrate a comprehensive effective workplace communication strategies.	TXT/3721/OC5	20	120	0
Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).	TXT/3721/OC6	0	0	150
Employability Skills – 60 Hrs	DGT/VSQ/N0102	50	0	0