

## 10. RESOURCE REQUIREMENT

### 10.1 Physical Resources

#### 10.1.1 Space Requirement

The total space for lecture halls, tutorial rooms and drawing hall/studio may be worked out as per latest AICTE norms

Sr. No.	Name of Laboratory/Workshop	Nos.	Area for one Laboratory/ Workshop (Sq.m)
1.	Weaving Workshop	3	200 (Min. height 5 metre)
2.	Testing Laboratory	1	200
3.	Dyeing Laboratory	1	200
4.	Printing Laboratory	1	200
5.	Dark Room Studio	1	20
6.	Lecture Halls	4	40 each
7.	Drawing Hall	2	40 each
8.	Stores	3	20 each

#### 10.1.2 Equipment Requirement

Sr. No.	Details of Equipment	Qty.	Approximate cost per unit in Rs.
<b>WEAVING WORKSHOP (PREP)</b>			
1.	<b>Warping Machine (Sectional Warping Machine</b>	1	<b>Cost Rs 60,000</b>
	All steel channel frame.		
	Drum circumference - 02 metres		
	Width of Drum - 01 meters.		
	All main drive fitted in ball bearings low noise and smooth running gearing.		
	2HP Single phase motor for driving.		
	Adjustable fleng hubs, gearings and supports should be provided for warp beaming by power driving for both Handloom and Powerloom Warp Beams.		
	Heck Box with open and soldered dent reed for lease should be provided.		

	Adjustable rack type, sliding creel frame horizontal creel of 108 cones capacity fitted with guides, tensioners.		
	Machine fitted with measuring dial for a required warp tape length upto 100 mts.		
<b>2.</b>	<b>Pin Winder</b>	<b>2</b>	<b>30,000 each</b>
	Automatic with 4-8 winding heads horizontal or circular magazine diameter setting pirn length adjustment.		
	Machine should be provided with thread guide for equitension of yarn per unit and auto stop motion on completion of pirn.		
	Winding can be from hank, cheese or cone and machine should be suitable for winding all types of yarn.		
<b>3.</b>	<b>Weft Winding Machine (Hank to Cone Winding)</b>	<b>1</b>	<b>30,000 each</b>
	Number of drum = 10		
	Hellical frictionless bakelite drums.		
	Machine should be able to wind from Hank, bobbin to cone and provided with tensioners, guides and other accessories for proper working condition like swift, ring bobbins should also be provided.		
<b>4.</b>	<b>Piano Card Cutting Machine (Card Punching Machine Coarse Pitch)</b>	<b>1</b>	<b>40,000 each</b>
	Capacity 13 punches including one for peg.		
	Cost iron frame with steel head stock.		
	Display Board for graph paper of teak wood of 4 feet x 1.5 feet height with adjustable graph paper support for pick reading.		
<b>5.</b>	<b>Drafting Frame</b>	<b>2</b>	<b>10,000 each</b>
	Vertical wooden frame (teak wood) 10 cm x 10 cm wooden log upto 6½ feet height and 7 feet width.		
	Two J-type iron strips ½” thick for supporting the warp beam from upper arm of drafting frame/stand		
<b>6.</b>	<b>Card Lacing Frame</b>	<b>2</b>	<b>50,000 each</b>
	Horizontal wooden (teak wood) frame with suitable stand utp 3 feet height.		
	Provision for pegs upto max 50 and suitable both for 200 hooks and 400 hooks Jacquard cards.		
	Width adjustable for all type of Jacquard cards		

<b>WEAVING WORKSHOP (HANDLOOM)</b>			
<b>1.</b>	<b>Handloom</b>	<b>4</b>	<b>10,000 each</b>
	Reed width = 24” and 36” (Two each)		
	All Deodar wood frame		
	Height of frame – 6 ½’		
	Back to Front - 6’		
	Shuttle box length = 22” on each side.		
	Gears for let-off and take-up of fabric.		
	6 steel Heald frame for each loom with 1500 heald wires.		
	2 shuttles and pirns for each loom.		
	4 treadle arrangement.		
<b>2.</b>	<b>Handlooms (one handloom (48”) with dobby and one handloom (60”) with Jacquard)</b>	<b>2</b>	<b>60,000 each</b>
	All Deodar wood frame		
	Height of frame – 8 ½’		
	Back to Front - 6’		
	For 48” handloom provision for Dobby fixation and for 60” handloom provision for Jacquard fixation.		
	Sufficient steel Heald frame, heald wires, maileye. Lingoos, shuttles, pirn be provided as accessory.		
	<b>12 Jack Dobby (for Handloom)</b>		
	Capacity – 12 Jack		
	Single cylinder/barral, single lift dobby.		
	Cost iron frame with fitting brackets to be fitted on handloom.		
	Single lift lag barral chain and spare pegs of provided as accessory.		
	<b>200 Hook Jacquard (For Handloom)</b>		
	Hooks Capacity = 200+8 selvedge hooks.		
	Needles = 200.		
	Single lift single cylinder, coarse pitch.		
	Needles and hooks of steel.		
	Cylinder of deodar wood with 7/32” holes.		
	Spring box with brass springs.		
	Length of Hook = 20”.		
	Needle thickness = 16 gauze.		
	Hooks thickness =12 gauze.		
	Complete in all respect for running condition		

<b>WEAVING WORKSHOP (POWER LOOM)</b>			
<b>1.</b>	<b>Power loom (for 24 Jack dobby fitting)</b>		<b>1,00,000 each</b>
	Read width 48".		
	Left hand drive		
	Speed of machine 95-120 r.p.m.		
	Electrical warp stop motion with 6 bars.		
	Over pick, 4 x 1 drop-box controlled by cam and lever system, 7 wheel take up motion.		
	Provision for dobby fitting.		
	Frame depth suitable to accommodate upto 16 heald frames of ¼" thickness.		
	Loom provided with side weft fork motion and loose reed motion.		
	Sley and race board made from good quality seasoned deodar wood.		
	Individual V-belt drive, BIS mark motor.		
	Machine should run efficiently, smoothly without vibrations.		
	All accessory, sixteen heald frames, 4 spare shuttles with pirns and 8000 heald wires 2 warp, beams and chains and weights should be provided.		
	<b>24 JACK DOBBY (for POWERLOOM)</b>		
	Capacity – 24 Jack, Left hand Dobby).		
	Single cylinder/barral, double left double left double jack lever.		
	Cost iron frame, left hand side dobby provided with fitting bracket and connecting rod for connection to bottom shaft of a Power loom.		
	Spare lag barral chain for double lift dobby and dobby pegs to be provided to enable proper running of the machine.		
<b>2.</b>	<b>Power loom (400 hook Jacquard fitting)</b>	<b>1</b>	<b>1,20,000 each</b>
	Reed width - 60".		
	Reed - fast Reed type.		
	Under pick motion.		
	Positive take up and let-off motion.		
	Provision for fitting of 400 hook Jacquard fitting, links, chains etc.		
	Slay and race board should be made of good quality deodar or teak wood.		

	4 x1 drop box.		
	Individual V-belt drive.		
	Accessories like lingoos and maileye heald wire about 8000, 4 shuttles with pirns, spare harness should also be provided.		
	<b>400 HOOKS JACQUARD (for POWERLOOM)</b>		
	Capacity – 400 + 8 Selvedge hooks.		
	Hooks thickness = 13 gauge.		
	Needle thickness = 14 gauge.		
	Needle size = 20”		
	Hook size = 24”		
	Cast iron frame.		
	Cylinder teak wood.		
	Single cylinder double lift jacquard.		
	Link, connections from bottom shaft of power loom.		
	Coarse pitch jacquard.		
	Accessories like maileye along with lingoos upto 8000, harness balls should also be provided.		
<b>WEAVING WORKSHOP (CARPET LOOM)</b>			
<b>1</b>	<b>Carpet Loom (upto 4’ carpet width)</b>	<b>2</b>	<b>4000 each</b>
	Two 4” diameter Hollow pipe, 6½’ length for every loom.		
	Collar at 4” inward to each end of warp pipe.		
	4 or 5 hooks welded on pipe to accommodate warp rod 1” dia and 4½’ length.		
	1” hole at about 6” under the right end of warp pipe to accommodate tensioning rod.		
	Two side wooden frames having foot rest to stand about 3’ length and holes cut to accommodate 4” hollow pipe to move freely.		
	Shedding arm length 3’.		
<b>2.</b>	<b>Carpet Loom (upto 6’ Carpet width)</b>	<b>2</b>	<b>6000 each</b>
	Two 6” Hollow pipe, 9’ length for each loom.		
	Collar at 5” inside to each end of warp pipe.		
	6-7 hooks at equal distance welded on the warp pipe to accommodate warp iron rod 2” dia and about 6½’ long.		
	1” hole on right handside of warp pipe about 6” inside collar to accommodate tensioning rod.		

	Two side wooden frames having foot rest to stand, about 3 to 4 "length, 6" thick.		
	Shedding arm length 3'.		
<b>3.</b>	<b>Misc. Equipment for Carpet Weaving</b>		<b>10,000 each</b>
	Iron Rod 1" dia 4½' length = 4 Nos.		
	Iron Rod 2" dia 6½' length = 4 Nos.		
	Iron Rod ¾" dia 2' length = 12 Nos.		
	Tie up chain (sangal) = 4 Nos.		
	Beating comb (Panja ) = 10 Nos.		
	Scissors (Carpet ) 8 Nos.		
	Wooden Temples (Pankh) 4' carpet length = 2 Nos.		
	Wooden Temples (Pankh) 6' carpet length = 2 Nos.		
	Warping iron rods 2" dia 3' length = 4 Nos.		
	Shedding Pipe 2" dia 7' length = 2 Nos.		
	Shedding Pipe 2" dia 10' length = 2 Nos.		
	<b>TEXTILE TESTING LAB.</b>		
<b>1.</b>	<b>Projection Microscope</b>	<b>2</b>	<b>25,000 each</b>
	Magnification range upto 1500 times.		
	Screen size : 180 mm φ.		
	Illumination : Episcopic lamp of 12V/100w or 24/250w.		
	Accuracy upto : 0.001 mm.		
<b>2.</b>	<b>Yarn Count Balance (Beesley's Balance)</b>	<b>2</b>	<b>3,000 each</b>
	<b>Bench type : one</b>		
	Pocket size : one		
	Balance with calibration facility.		
	Balance capable to measure yarn count of warp & weft of small lengths of fabrics in cotton, linen, woollen, silk and worsted systems.		
	Metallic template graduated in cotton; ½ cotton; worsted; woollen,; silk and linen.		
	Standard weight box containing two standard weights (hanging type) i.e. one larger and one of small size.		

3.	<b>Yarn Tensile Strength Tester</b>	1	<b>50,000 App.</b>
	Single end yarn strength tester ideal for testing the single as well as plied yarn test lengths.		
	Power driven tester with constant rate of traverse principle.		
	Four strength scales: 0 – 300 gms; 0 – 500 gms. 0 – 300 gms; 0 – 500 gms.		
	Elongation scale graduated in mm or inches and percentage.		
	Standard test length of upto 500 mm. or 20 inches.		
	Auto stop motion on specimen break.		
4.	<b>Cloth Tensile Strength Tester</b>	1	<b>50,000 App.</b>
	Tensile strength Tester – Constant rate of loading type.		
	Capacity : 300 lbs.		
	Standard grips for woven fabrics and flat filament yarn fabrics.		
	Power operated with motor of ½ H.P.		
5.	<b>Fabric Thickness Tester</b>	1	<b>20,000 App.</b>
	Thickness range upto – 75 mm.		
	Measures bulk density of fibrous materials.		
	Range of pressure : 20 - 2000 gm/cm <sup>2</sup> .		
	Manually operated.		
	Accuracy : 0.3 mm.		
6.	<b>Yarn Crimp Tester</b>	1	<b>10,000 App.</b>
	Tension ranges– 0 - 175 gm.		
	Metric and imperial calibrations.		
	Test length : 120 cms or 48 inches.		
	Fixed jaw and sliding cursor type.		
7.	<b>Nep Counting Templates</b>	1	<b>5000 App.</b>
	Consisting of cardboard of black background to facilitate visibility/ identification of neps present in the fibrous web.		
	Transparent templates consisting of rows of holes of standard size.		
8.	<b>WRAP Reel (Power Driven)</b>	1	<b>25,000 App.</b>
	Electronic varispeed drive with slow stop to eliminate tension variations. Speed limits: 0 – 300 m/min.		
	Collapsible swift one metre circumference.		
	Counter to measure number of turns.		

	Separate creels with tension device for holding yarn packages in the form of hanks, bobbins and cones.		
	Warning belt on completion of lea length of 100 metre.		
9.	<b>WRAP Block</b>	1	<b>10,000 App.</b>
	Wrap Block with cutter to ensure exact length of sliver and roving.		
	Resettable counter.		
	Fitted with creel for two roving bobbins and one sliver.		
	Drum width : 75 mm (metric)		
	Drum circumference : 1 metre (metric)		
	Manual operated.		

<b>Dyeing Laboratory</b>			
1.	Stainless steel Jigger Lab Type (Manually or power operated)	1	27,000
2.	High Speed Stirrer with regulator	3	6,000
3.	Dyeing Bath (4' x 2' x 3')	4	5,000
4.	Dyeing Rack (8' length)	10	2,000
5.	Misc. Equipment for Dyeing	LS	10,000
6.	Dyeing Oven	1	10,000
7.	Steel Cabinets	4	11,000
8.	Laundrometer with Grey Scale for colour change	1	15,000
9.	Crock meter with Grey Scale for Staining	1	10,000
<b>Printing Laboratory</b>			
1.	Steam Heated Printing Tables	4	12,000
2.	Free hand Printing Frames (Wooden)	1	2,000
3.	Tracing Tables	6	10,000
4.	Slanting Printing Tables	2	5,000
5.	Flat Printing Table (for block printing)	2	6,000

<b>Computer Laboratory</b>			
1.	PC Pentium-IV, seamer 3300 with laser printer with textile designing software with transparency adaptor	5	75,000
2.	LCD Projector	1	1,50,000
3.	Any one software of textile design may be purchased from the following given softwares:		
	1. Scotweave: Scottish college of Textiles Gala Shiels, UK		
	2. Tex Styler Wonder Weave, Bombay		
	3. Auto Tex for Weaving, PLC Consulting Company,		

	Gwalior House, 37- Rajpur Road, Delhi 110 054		
4.	Textronics Design Systems, 120 Ist Floor Hindustan Kohinoor Industrial Complex; LBS Marg, Vikhroli (W) Mumbai 83		
<b>*Computer laboratory will be common with other disciplines being run in the institute</b>			
<b>Studio (Dark Room)</b>			
1.	Zoom Digital Camera 64MB RAM 3.1 Mega pixel	1	50,000
2.	Tracing Tables 3'x2' with glass top with light arrangement	4	1,000
3.	Exposing Table (Full Empirical Lockers)(Godrej)	4	1,000
4.	Enlarger with provision for reproduction from reflection copy	1	3,000
5.	Drafting Table with lighting arrangement	30	5,000

## 9.2 Human Resource Requirement

Weekly work schedule, annual work schedule, student-teacher ratio for various group and class size, staffing pattern, work load norms, qualifications, experience and job description of teaching staff, workshop staff and other administrative staff may be worked out as per norms and standards laid down by AICTE.