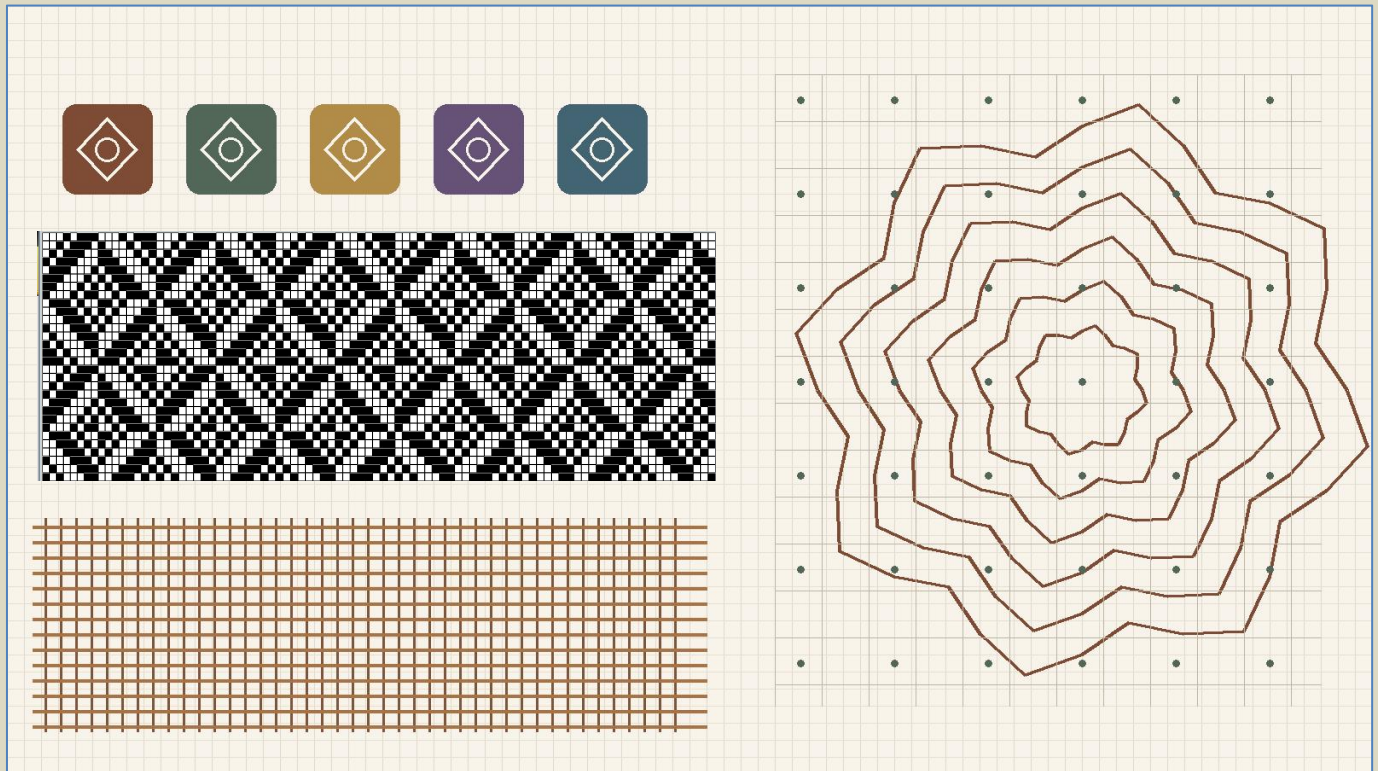




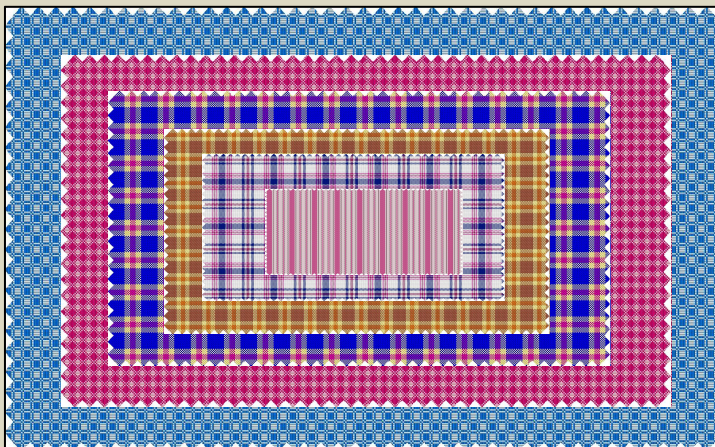
Clue4Tex-CADTrainingTextile

CAD TRAINING • TEXTILE DESIGNING • DIGITAL WEAVING

TRAINING SYLLABUS TEXTILE DESIGN USING CAD SOFTWARE



COMPREHENSIVE PROFESSIONAL TRAINING SYLLABUS



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1. Introduction

Clue4Tex-CADTrainingTextile provides practical training in digital textile design with emphasis on the relationship between **design creation, textile repeat development, colour management, weave/CATD development, fabric visualization and technical output**. The source material is organized into two broad parts: **Design Tools** and **CATD Tools**.

The Design Tools section covers drawing, selection, repeat/seamless patterns, transformation, colour, textile-specific functions, brushes, layers, measurement/precision, image processing, and image import/export.

The CATD section then moves from weave designing to design graphs, fabric simulation and fabric designing, including weave/fabric parameters, colour-ways, float control, visualization and export/printing functions.

1. Course Framework

Users

- Students and faculty of Textile Design, Textile Engineering, Fashion/Textile programs and related CAD-oriented courses.
- Professionals working in textile design, handloom, weaving, product development and CAD/CATD.
- Learners who need a structured pathway from digital artwork to textile-oriented production outputs.

Training methodology

- Live software demonstration followed by guided practice.
- Topic-wise exercises using motifs, repeats, weave structures and textile designs.
- Demonstration of the effect of each tool on a textile design rather than learning tools in isolation.
- Progressive workflow: **create** → **edit** → **repeat** → **colour** → **textile conversion** → **graph** → **simulation** → **output**.

Delivery structure

Tool / Function	Primary use	Textile CAD application
Foundation	Digital textile design concepts, workspace, file handling and drawing fundamentals	Understand the digital design environment and create basic motifs.
Design development	Selection, transformation, repeat, colour, contour, brushes and layers	Develop editable textile motifs and repeat structures.
Textile-specific	Density, warp/weft, extra warp/weft and weave structures	Connect digital artwork with textile construction concepts.
CATD	Design graphs, fabric simulation and loom files	Convert design concepts into textile CAD-oriented outputs.
Output	Graphs, textures, technical sheets, print and file export	Prepare organized deliverable for documentation and further production workflow.

2. Module 1 — Drawing Tools

Module purpose: Build the basic visual elements of a textile motif or design using manual and geometric drawing functions.

Expected learning outcome: Create clean geometric and free form motifs and understand which drawing method is appropriate for each design element.

Tool / Function	Primary use	Textile CAD application
Freehand Draw	Manual drawing with mouse/tablet	Useful for sketching organic motifs, rough concepts and hand-drawn effects.
Line	Draw straight lines	Useful for stripes, construction guides, linear motifs and geometric pattern elements.
Rectangle / Square	Create rectangular geometric motifs	Useful for checks, blocks, borders and geometric units.
Ellipse / Circle	Create circular/oval motifs	Useful for dots, medallions, floral centers and geometric motifs.
Arc	Draw arcs and curved elements	Useful for curved borders, ornamental lines and motif contours.
Polygon	Create multi-sided shapes	Useful for geometric motifs and structured pattern units.
Bezier Curve	Create smooth curves	Useful for controlled floral, paisley and ornamental outlines.
Curve Tool	Draw/edit curved forms	Useful for refining curved motif shapes.
Brush	Paint using selected brush patterns	Useful for expressive or textured motif creation.
Spray	Spray-style drawing	Useful for scattered or textured visual effects.
Fill	Fill an enclosed area with colour	Useful for rapidly colouring motif areas and design blocks.
Eraser / Rubber	Remove pixels/areas	Useful for cleaning unwanted parts and correcting artwork.
Text	Insert text into a design	Useful for labels, annotations, design sheets and presentation elements.

3. Module 2 — Selection Tools

Module purpose: Teach learners how to isolate, manipulate and edit specific parts of a textile motif.

Expected learning outcome: Select precise areas and prepare them for editing, transformation, repeat development or removal.

Tool / Function	Primary use	Textile CAD application
Rectangular Selection	Select rectangular regions	Useful for structured pattern areas and repeat units.
Freehand Selection	Select irregular regions	Useful for organic motifs and non-geometric areas.
Magic Wand Selection	Select similar/connected areas based on image information	Useful for isolating colour-based regions in imported artwork.
Move Selection	Move a selected area	Useful for repositioning motifs and correcting layouts.
Resize/Rotate Selection	Change size or orientation	Useful for motif variation and repeat development.
Drop Selection	Remove/drop a selected region	Useful for editing and cleaning selected content.
Crop to Selection	Crop image to selected area	Useful for isolating a motif or defining a working repeat.
Deselect / Merge-related operations	Manage selection state	Useful for controlling complex editing operations.

4. Module 3 — Repeat & Seamless Pattern Tools

Module purpose: Develop repeat structures that can continue across a textile surface without visible breaks.

Expected learning outcome: Create straight, shifted, mirrored and seamless repeats and understand repeat-preview methods.

Tool / Function	Primary use	Textile CAD application
Horizontal Repeat	Repeat content horizontally	Useful for borders, horizontal pattern development and all-over repeats.
Vertical Repeat	Repeat content vertically	Useful for vertical motifs and repeat layouts.
Half-drop Repeat	Offset alternate repeats	Useful for natural-looking floral and organic textile patterns.
Mirrored Repeat	Reflect repeated units	Useful for symmetrical or balanced patterns.
Repeat from Centre	Build repeat around a centre point	Useful for centered or radial-style arrangements.
Horizontal Move Repeat	Shift repeat horizontally	Useful for controlled pattern displacement.
Vertical Move Repeat	Shift repeat vertically	Useful for controlled pattern displacement.
Motif Duplication	Duplicate motif elements	Useful for rapid pattern construction.
Repeat Preview / Repeat View	Preview repeat behaviour	Useful for checking continuity before finalizing artwork.
Automatic Repeat Detection	Detect repeat characteristics	Useful for working with imported or existing repeated designs.

5. Module 4 — Transformation Tools

Module purpose: Modify the orientation, scale and placement of design elements.

Expected learning outcome: Apply controlled transformations to create motif variations and correct layouts.

Tool / Function	Primary use	Textile CAD application
Rotate	Turn an object/selection	Useful for motif orientation and directional pattern variation.
Flip Horizontal	Reflect horizontally	Useful for mirrored motifs and symmetry.
Flip Vertical	Reflect vertically	Useful for mirrored motifs and layout correction.
Flip 90°	Rotate/flip through 90°	Useful for directional motif variation.
Mirror	Create reflected versions	Useful for symmetrical compositions.
Resize	Change dimensions	Useful for scaling motifs to suit repeat or fabric dimensions.
Move	Reposition design elements	Useful for placement and layout refinement.
Crop	Remove unwanted outer areas	Useful for defining design units.
Insert/Remove Area	Add or remove working space	Useful for repeat construction and layout adjustment.
Skew / Unskew	Alter or correct slant	Useful for correcting scanned/imported artwork and controlled distortion.
Duplicate	Create copies	Useful for efficient motif development.
Horizontal/Vertical Duplication	Repeat copies in a direction	Useful for systematic pattern construction.

6. Module 5 — Colour Tools

Module purpose: Control, analyze and prepare colours for textile design development.

Expected learning outcome: Create colourways, simplify complex artwork and inspect colour distribution.

Tool / Function	Primary use	Textile CAD application
Colour Palette	Select available colours	Core function for design colouring and colourway development.
Foreground / Background Colour	Set active drawing colours	Useful for controlled painting and editing.
Colour Remapping	Replace selected colours	Useful for rapid colourway development.
Colour Reduction / Automatic Colour Reduction	Reduce number of colours	Useful for simplifying designs and preparing controlled colour palettes.
Grayscale → Black & White Threshold	Convert according to threshold	Useful for separating tonal information into a simplified two-tone result.
Invert Colours	Reverse colour values	Useful for alternative colour studies and image correction.
Remove Colour	Remove a selected colour	Useful for cleaning artwork and isolating design components.
Remove Unused Colours	Clean palette	Useful for reducing unnecessary palette entries.
Remove Duplicate Colours	Consolidate repeated palette entries	Useful for cleaner colour management.
Colour Histogram	Inspect colour distribution	Useful for understanding dominant colours in an imported design.
Horizontal / Vertical Colour Count	Count colour occurrence by direction	Useful for analysing colour distribution in textile layouts.
Contrast Adjustment	Change tonal separation	Useful for improving visibility and preparing artwork.
Colour Mixing	Combine/develop colours	Useful for creating colour variants.
Transparent Colours	Use transparency	Useful for masking and layered visual development.
Protected/Masked Colours	Protect selected colours from changes	Useful for controlled recolouring and editing.

7. Module 6 — Contour Tools

Module purpose: Develop and refine contours for figured and Jacquard-oriented textile artwork.

Expected learning outcome: Control the appearance and density of contour structures around design elements.

Tool / Function	Primary use	Textile CAD application
Add contour	Add contour lines/structure	Useful for decorative and figured textile effects.
Remove contour	Remove contour	Useful for simplifying a design.
Thin contour	Reduce contour thickness	Useful for delicate motif definition.
Thicken contour	Increase contour thickness	Useful for stronger motif boundaries.
Prune contour	Clean/reduce contour detail	Useful for refining complex contour structures.

8. Module 8 — Brush Tools

Module purpose: Use brush libraries and brush behaviour for efficient motif and pattern creation.

Expected learning outcome: Select, configure and repeat brush forms to create controlled decorative elements.

Tool / Function	Primary use	Textile CAD application
Brush Palette	Access brush choices	Useful for selecting drawing styles.
Brush Selection	Choose an appropriate brush	Useful for motif and texture creation.
Brush Stamp Mode	Stamp brush forms	Useful for repeated decorative elements.
Brush Spacing	Control distance between brush stamps	Useful for regular or controlled motif distribution.
Pattern Brush	Use a brush based on a pattern	Useful for decorative pattern development.
Repeating Brush	Repeat brush elements	Useful for rapid textile pattern creation.
Random/Repeating Image Functions	Distribute or repeat image content	Useful for tossed, scattered or repeated pattern effects.

9. Module 9 — Layers

Module purpose: Organize design information into editable layers.

Expected learning outcome: Use layers to separate design components, manage visibility and duplicate/arrange design information.

Tool / Function	Primary use	Textile CAD application
Create/load layer	Create or bring in a layer	Useful for separating motif, background and colour components.
Duplicate layer	Copy a layer	Useful for creating alternate versions.
Delete/remove layer	Remove a layer	Useful for project cleanup.
Move layer up/down	Change stacking order	Useful for controlling visual hierarchy.
Send layer to back	Place layer behind others	Useful for background control.
Layer visibility	Show/hide layers	Useful for focused editing and demonstrations.
Separate colour palettes by layer	Manage colours by layer	Useful for organized colourway and component development.

10. Module 10 — Measurement & Precision Tools

Module purpose: Introduce measurement and workspace-control functions needed for accurate textile design work.

Expected learning outcome: Use rulers, grids, guides, density and zoom/pan controls to maintain scale and precision.

Tool / Function	Primary use	Textile CAD application
Ruler	Reference distance/position	Useful for dimensioning and alignment.
Measure Tool	Measure design distances	Useful for checking motif/repeat dimensions.
Grid	Provide a regular reference	Useful for geometric design and alignment.
Guides	Provide alignment references	Useful for precise placement.
Crosshair Cursor	Assist precise positioning	Useful for accurate drawing and editing.
Pixel coordinates	Locate design positions	Useful for digital image precision.

Centimetre/inch measurement	Work in physical units	Useful for relating digital dimensions to textile dimensions.
Fabric density	Reference textile density	Useful for connecting artwork dimensions with fabric construction.
Zoom / Pan	Navigate the workspace	Essential for detailed editing and inspection.

11. Module 11 — Image Processing / Filter Tools

Module purpose: Prepare and refine raster artwork for textile design development.

Expected learning outcome: Clean imported artwork, adjust appearance and create controlled image variations.

Tool / Function	Primary use	Textile CAD application
Despeckle	Remove small unwanted image noise	Useful for cleaning scanned or imported motifs.
Averaging	Smooth/average image information	Useful for reducing local variations.
Contrast Stretch	Expand tonal contrast	Useful for improving image definition.
Colour Reduction	Reduce palette complexity	Useful for simplifying textile artwork.
Colour Remapping	Replace colours	Useful for colourway creation.
Invert	Invert image colours	Useful for alternate design studies.
Threshold	Convert based on a tonal threshold	Useful for simplified separations.
Difference/Subtraction	Compare or subtract image information	Useful for image comparison and controlled editing.
Image Filtering	Apply image-processing effects	Useful for refining or varying artwork.
Pattern distortion/mosaic-type effects	Create controlled visual distortions	Useful for experimental textile pattern development.

12. Module 12 — Image Import / Export

Module purpose: Teach learners to move design data between common image, document and textile-CAD formats.

Expected learning outcome: Understand file-format choices and prepare files for subsequent textile CAD workflows.

Tool / Function	Primary use	Textile CAD application
PNG / GIF	Import/export common raster images	Useful for digital design exchange and web/reference assets.
PBM / PGM	Support bitmap/greyscale formats	Useful for image-processing workflows.
PCX / JPEG / TIFF	Exchange raster artwork	Useful for importing scanned or photographic design references.
BMP	Bitmap exchange	Useful where bitmap-based textile/production workflows require BMP.
PDF / PS / EPS / SVG	Document/vector exchange	Useful for presentation, vector artwork and documentation.
Jacquard / textile CAD formats	Exchange textile-CAD data where supported	Useful for moving designs into specialized textile workflows.

13. Module 13 — CATD: Weave Designing

Module purpose: Introduce the core functions used to build and edit woven structures and associated yarn/fabric parameters.

Expected learning outcome: Develop a weave, assign yarns/colours, manage density and produce visualization and technical outputs.

Tool / Function	Primary use	Textile CAD application
Define Weave Area	Define warp, weft, shaft and treadle areas	Establish the structural workspace for weave development.
Define Fabric Density	Set fabric-density parameters	Relate the weave design to fabric construction.
Weave Editing	Edit weave structure	Modify individual or grouped weave elements.
Colour Palette & Switching	Select and switch colours	Support design colour development.
Colour Selection, Editing & Creation	Create/edit colours	Build the required design palette.
Yarn Assignment	Assign yarn colours individually or by group and sequence	Connect colour design with yarn order.
Yarn Type / Count	Select yarn type, count unit and edit count	Define yarn characteristics for the design.
Insert/Delete Warp or Weft	Modify structural dimensions	Adjust weave size and construction.
Weave Area Selection / Crop	Select or crop weave area	Focus editing on a specific region.
Copy / Paste / Cut / Repeat	Reuse weave areas	Build larger designs efficiently.
Horizontal / Vertical Mirroring	Mirror selected area	Create symmetry and repeat variations.
Double Cloth	Manage face weave, back weave and stitching points	Develop double-cloth structures.
Weave Repeat & Freeze	Repeat and lock structural arrangement	Maintain controlled weave repeat.
Fabric Visualization & Colorways	View front, back and sample representations	Evaluate appearance and colour variations.
Export & Print	Output weave, draft, pegplan, fabric and technical sheet	Prepare technical documentation.

14. Module 14 — CATD: Design Graphs

Module purpose: Convert imported design artwork into weave-filled graph structures with boundary control and float management.

Expected learning outcome: Prepare production-oriented design graphs and related technical/numeric outputs.

Tool / Function	Primary use	Textile CAD application
Design Import	Import PNG/JPG/BMP	Bring artwork into the graph workflow.
Weave Selection	Select weave structures	Assign appropriate weaves to graph areas.
Weave Filling — Area & Colour Based	Fill regions using selected weaves	Translate visual design areas into woven structures.
Boundary Protection	Protect inner/outer boundaries and selected sides	Maintain motif boundaries during filling.

Weave Modifications	Modify applied weaves	Correct or customize structural areas.
New Weave Creation	Create a new weave	Develop a suitable structure for the design.
Graph Editing	Edit graph cells/areas	Refine the final design graph.
Float Checking	Check float conditions	Identify areas requiring structural correction.
Float Binding	Bind/control floats	Improve structural integrity.
Design Repeat	Vertical/horizontal/shift/mirror repeats and freeze	Develop repeatable production graph layouts.
Export	Graph, grid, texture, numeric graph and technical sheet	Prepare technical and production-oriented outputs.
Print Graph	Set layout, graph size and block size	Produce printable graph documentation.
Electronic Punch Application	Single-colour, multi-colour and split-colour files	Prepare electronic punch-related outputs where supported.

15. Module 15 — CATD: Fabric Simulation

Module purpose: Demonstrate how weave, yarn and density parameters can be combined to visualize a fabric design.

Expected learning outcome: Create a simulated fabric representation and understand how yarn and density settings influence the rendered appearance.

Tool / Function	Primary use	Textile CAD application
Base Pattern Selection	Select the base design	Start the simulation from a defined pattern.
Import/Browse Design	Bring in the design	Use an existing digital design.
Original Size for Weaving	Maintain intended design scale	Relate simulation to weaving dimensions.
Border Protection	Protect border regions	Maintain important design boundaries.
Weft Selection	Select weft for the design	Define the weft component used in simulation.
Weave Assignments	Assign, clear, create, save, modify and replace weaves	Control structural information.
Yarn Editing	Edit yarn type, unit, count and colour	Define yarn characteristics.
Yarn Colour Sequencing / Switching	Control colour order	Develop colourways and yarn sequences.
Yarn Density	Set reed, TPD, EPI and PPI	Relate yarn density to fabric appearance.
Graph Correction	Colour selection, float checking and binding	Correct structural issues before rendering.
Fabric Visualization	Front, back, front cut and rear cut	Inspect different visual representations.
Simulation & Rendering	Adjust level, brightness, contrast, hue and saturation	Refine simulated appearance.
Export	Graph, grid, texture, numeric graph, fabric and technical sheet	Create final documentation and outputs.

16. Module 16 — CATD: Saree Designing

Module purpose: Apply textile CAD concepts to saree-specific layout, repeat, fabric assignment and visualization.

Expected learning outcome: Develop a saree layout and produce related technical/graph/print outputs.

Tool / Function	Primary use	Textile CAD application
Layout Selection	Select a saree layout	Choose the working arrangement.
Custom Layout	Create a custom layout	Adapt the design to a specific saree composition.
Symmetry Settings	Control symmetry	Maintain balanced design placement.
Repeat Settings	Control design repeat	Build body/border/pallu continuity.
Fabric Assignments	Assign fabric/design areas	Connect layout regions to fabric information.
Fabric Edit	Edit yarn properties, thread sequence, yarn density and repeat orientations	Control textile construction parameters.
Light & Colour Effects	Apply appearance effects	Improve visualization of the saree design.
Export	Layout, technical sheet, graphs and print	Prepare documentation and presentation/production outputs.

17. Integrated Practical Demonstrations

The following demonstrations combine the source topics into end-to-end exercises.

Tool / Function	Primary use	Textile CAD application
Project 1 — Motif to Repeat	Create a motif using drawing tools; select, transform and colour it; create horizontal/vertical/half-drop/mirrored repeats; inspect repeat preview.	Demonstrates drawing + selection + transformation + colour + repeat.
Project 2 — Imported Design to Graph	Import PNG/JPG/BMP; select weave; fill by area/colour; protect boundaries; edit graph; check/bind floats; develop repeat; export graph and technical sheet.	Demonstrates image import + design graph + structural correction + output.
Project 3 — Weave to Fabric	Define weave area and density; assign yarn type/count/colour; create weave; visualize front/back/sample; develop colourways; export technical outputs.	Demonstrates weave designing + yarn + density + visualization.
Project 4 — Fabric Simulation	Select base pattern; assign weft and weave; edit yarn; set reed/TPD/EPI/PPI; correct graph; render front/back/cut views; export fabric and technical sheet.	Demonstrates complete simulation workflow.
Project 5 — Saree CAD	Select/customize layout; set symmetry and repeats; assign/edit fabric; set yarn properties and density; apply light/colour effects; export layout and graphs.	Demonstrates application of textile CAD to saree design.

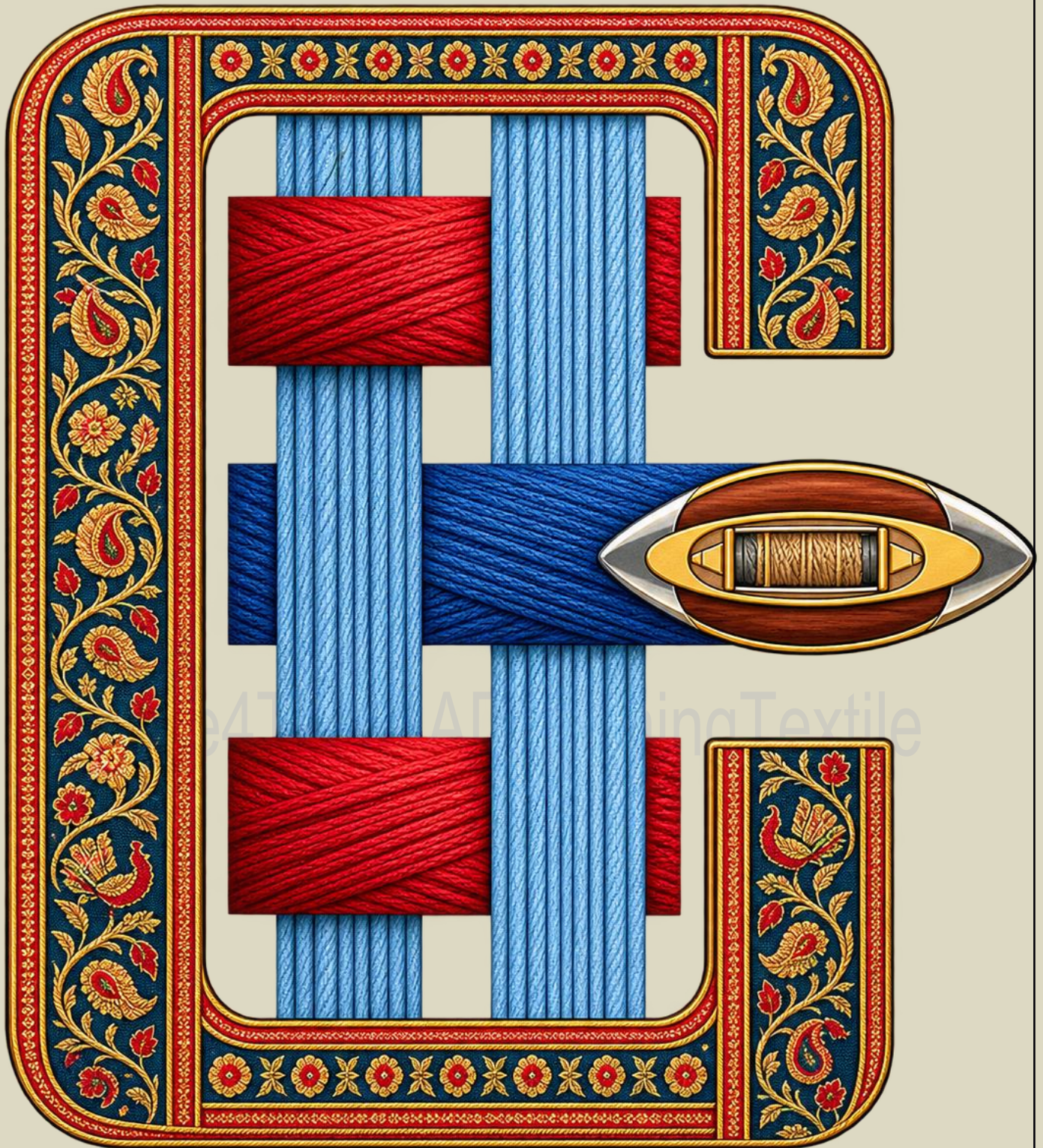
18. Learning Outcomes

After completing the syllabus, learners should be able to:

- Create and edit digital textile motifs using drawing and image-editing tools.
- Use selection, transformation, brush and layer functions for controlled design development.
- Create and inspect repeat and seamless textile patterns.
- Develop and modify colour palettes and colourways.
- Use textile-specific density, warp/weft, contour and figured-design functions.
- Import and export common raster/vector and textile-CAD file formats supported by the software.
- Create and edit woven structures using weave-design tools.
- Convert imported design artwork into design graphs with weave filling, boundary protection and float control.
- Apply yarn type, count, colour and density parameters to textile design workflows.
- Generate fabric visualizations and simulations and prepare technical outputs.
- Develop saree layouts with symmetry, repeats, fabric assignments and technical outputs.

Note: Tool “use” descriptions in this syllabus are instructional explanations for training purposes; where the uploaded source only names a tool, the explanation is presented as a practical training application rather than as a claim that the source itself defines that function.

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Textile Design CAD Training & Jacquard Design Creation Services