

Syllabus For Embroidery Machine (Computerized) Operator With CAD

Course Name	EMBROIDERY MACHINE (COMPUTERIZED) OPERATOR WITH CAD, V2
Course Code	STC -APL /2021 / 0302, V2
Level	3
Occupation	EMBROIDERY-MACHINE (COMPUTERIZED) OPERATOR WITH CAD
Job Description	Machine Embroidery (computerized) with CAD works on a multiple-heads embroidery machine controlled by pattern chain creating designs on garments or its parts through the computerized system. Positions garment, places hoop frame on machine bed, starts machine to sew a design on a garment, rethreads machine for multi-colour designs, monitors the progress and ensures the required quality of embroidery is achieved
Course Duration	Total Duration 390 Hrs (T-90, P-180, OJT-60 and ES-60)
Trainees' Entry Qualification	Grade 10 OR Grade 8 with two year of (NTC/ NAC) after 8 th 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 yr experience OR Previous relevant Qualification of NSQF Level 2.5 with 6 months experience
Trainers Qualification	B.Voc/Degree in Textile Designing/ Fashion Technology/ Costume Design & Dress Making from UGC recognized university with one year experience in the relevant field. OR Diploma(Minimum 2 years) in Textile Designing/ Fashion Technology/ Costume Design & Dress Making from a recognized board of education or relevant Advanced Diploma (Vocational) with two-year experience in the relevant field. OR National Trade Certificate (NTC) /National Apprentices Certificate (NAC) issued by NCVT in the Trade of "Computer Aided Embroidery & Designing" With three years' experience in the relevant field.

Structure of Course:

Module No.	Outcome	Theory (Hrs)	Practical (Hrs)	Total (Hrs) [Multiple of 30]
1	Identify embroidery tools, machine and Prepare sample basic hand stitches (temporary & permanent stitch)	10	20	30
2	Demonstrate and prepare the sample in both techniques (hand and machine).	10	20	30
3	Design Embroidery with suitable fabric using coral draw software. (Indian dresses, western dresses)	10	20	30
4	Identify, Set up and troubleshoot the machine with the proper maintenance procedure.	10	20	30
5	Develop the skill to make computerizes design with the application of software.	10	20	30
6	Setup computerized embroidery machine for transferring the image for all the digitizing process.	10	20	30
7	Identify, select and apply the digitizing design to prepare T-shirt and use various techniques e.g. Appliqué work, Sequins work, Taping work, Cording work, Chenille work.	20	40	30
8	Demonstrate knowledge of health, safety and security at the workplace (Machine embroidery works)	10	20	30
9	OJT		60	60
10	Employability Skill	60		60
	TOTAL	150	240	390

Employability Skill: 60Hrs (Provided by NCVET)

OJT: 60 hours (in multiple of 60)

SYLLABUS:

Module No. 1: Identify embroidery tools, machine and Prepare sample basic hand stitches (temporary & permanent stitch)

Outcome : Identify embroidery tools, machine and Prepare sample basic hand stitches (temporary & permanent stitch)

Theory Content:

- Knowledge of trade-related tools & their importance.
- Knowledge of colour wheel and colour schemes.
- Knowledge of hand embroidery & stitches

Practical Content:

- Familiarization & handling of tools with safety practical exercises
- Colour wheel, colour schemes and identify the fabric
- Basic hand stitches
- Temporary
 - Basting even
 - Basting uneven
 - Diagonal
 - Slip basting
- Permanent
 - Running stitch
 - Hemming stitch
 - Slip stitch
 - Run and backstitch
 - Overcasting
- Whipstitch

Module No. 2: Demonstrate and prepare the sample in both techniques (hand and machine).

Outcome: Demonstrate and prepare the sample in both techniques (hand and machine).

Theory Content:

- Knowledge of trade-related tools & their importance.
- Knowledge of colour wheel and colour schemes.
- Knowledge of hand embroidery & stitches

Practical Content:

- Knowledge of computer embroidery by swatch display made by different machines
- Start and shutdown process of the machine
- Familiarize with different stitches by running a computer embroidery machine
- Traditional embroidery: making embroidery samples according to a different state on traditional fabric and traditional threads and traditional motif
- Familiarization with different equipment related to the machine
- Familiarization with tools of embroidery machines.

Module No. 3 Design Embroidery with suitable fabric using coral draw software. (Indian dresses, western dresses).

Outcome: Design Embroidery with suitable fabric using coral draw software. (Indian dresses, western dresses).

Theory Content:

- The introduction and function of various parts of the computer also relate to the computerized embroidery machine.
- Basic knowledge of computer.
- Introduction to Corel draw.
- Commands like cut, copy, paste and text writing

Practical Content:

- Familiarize with a personal computer and its parts

- Starting a personal computer and starting software's like a paintbrush, coral draw
- Mouse practice
- Practice a paintbrush
- Making designs and colouring
- Practice on Corel draw and different software
- Making designs and colouring on software
- Use of scanner.

Module No. 4 Identify, Set up and troubleshoot the machine with the proper maintenance procedure.

Outcome: Identify, Set up and troubleshoot the machine with the proper maintenance procedure.

Theory Content:

- Types of needle and their uses and handling.
- Needle precautions
- Types of needle
- Checking the needle
- Selection of needle
- According to fabric

- Types of embroidery threads
- Brief knowledge of threads.
- Composition
- Benefits and disadvantages of different kinds of thread.
- Difference between upper thread and bobbin thread.
- Type of fabrics
- How to handle different fabrics
- Benefits and disadvantage of heavy and light fabrics
- Details knowledge of
- Machine head, tension point, sensors etc
- Embroidery process
- Head working area and stitch formation
- Maintenance and safe principle. Machines operating

Practical Content:

- Machine operation
- How to change the needle in details and its tools
- Precautions while changing the needle
- Needle control according to design
- Load thread on the machine
- Winding/installing the bobbin
- Bobbin precaution
- Use of different fabric on a computerized embroidery machine
- Practising on running machine tension making of the upper thread and bobbin thread
- Machine oiling and maintenance
- Practice running designs on the machine already available in the machine
- Machine working in simple embroidery and specialized embroidery like sequins, tapping & cording, chenille etc. (videos or photo)

Module No. 5: Develop the skill to make computerizes design with the application of software.

Outcome: Develop the skill to make computerized design with the application of software.

Theory Content:

- Stabilizers/backing their types and uses
- Need of stabilizing fabric
- Knowledge of digitizing software and machine keys.
- Description of software and its need.
- How software works (x-axis and y-axis)
- How software designs linked with the machine.
- Introduction of digitizing software like software interface etc.

Practical Content:

- Hooping practice
- Clipping fabric on the pantograph
- Placement of design and making the origin of the design
- Practice designs already installed in the machine
- Familiarize with backing paper or stabilizing material
- Design input and output methods from software to machine and machine to software
- Operating a machine and loading designs and setting the origin
- The practice of running design with threading, changing the needle, loading designs from software to machine etc.
- Loading designs from software to UBS- drive.
- Loading design to machine
- Setting origin.
- Threading and running designs on fabric

Module No. 6: Setup computerized embroidery machine for transferring the image for all the digitizing process.

Outcome: Setup computerized embroidery machine for transferring the image for all the digitizing process.

Theory Content:

- Use of scanner with digitizing software.
- Importance of scanner
- Detailed study of digitizing procession software.
- Learn different stitches with examples on a machine.
- Making design on software.
- Loading digitized designs Information of design on LCD
- Details knowledge of machine regarding the area and its capabilities.
- The setting of design on different articles.
- Placement specification like with printing.

Practical Content:

- Transferring of images and sketches in software design related to paintbrush and coral draw with the software
- Joining big images
- Software digitizing
- Type of stitches
- Digitization process and all commands in software
- Stitch control and smooth running of the machine as per digitizing
- Limitation of software
- Benefits of using the software
- Machine designs functions & tools.
- Resize design with a machine. Flip, rotate etc
- Move to a particular point

- Placement information and origin making

Module No. 7 Identify, select and apply the digitizing design to prepare T-shirt and use various techniques e.g. Appliqué work, Sequins work, Taping work, Cording work, Chenille work.

Outcome: Identify, select and apply the digitizing design to prepare T-shirt and use various techniques e.g. Appliqué work, Sequins work, Taping work, Cording work, Chenille work.

Theory Content:

- Knowledge of monogram & logo
- Advance techniques in machine embroidery
- Detailed knowledge of special Attachments on Operating machine on self-made design.
- How to handle these attachments
- Knowledge of changing guides for sequins and cording tapping device.

Practical Content:

- Operating machine on self-made design
- Monogramming and logo making on designs
- Digitizing lace designs
- Appliqué/patching
- Using two fabrics, patchworks
- Chenille laces
- Advance digitizing
- Digitizing of sequins
- Digitizing of taping & cording
- Digitizing of chenille
- Precautions in handling these special attachments
- Making embroidery samples on garments:
- Dresses neckline
- Patch embroidery
- Chanya choli
- Logo designing
- Blouse
- Kurtas
- Indo western

Module No. 8: Demonstrate knowledge of health, safety and security at the workplace (Machine embroidery works).

Outcome: Demonstrate knowledge of health, safety and security at the workplace (Machine embroidery works).

Theory Content:

- Keep vigilance for potential risks and threats associated with the machine embroidery work and types of equipment used. Proper initiation and shutdown of the machine(s) at the beginning and closure of the day.
- Ensure the tools and equipment like sewing machines, shears, needles, etc. are handled safely
- Comply with health and safety-related instructions applicable to the workplace
- Use and maintain personal protective equipment as per protocol
- Carry out own activities in line with approved guidelines and procedures
- Maintain a healthy lifestyle and guard against dependency on intoxicants
- Follow environment management system related procedures
- Store materials and tools in line with manufacturer s and Cooperative

- Society/NGO/SHG requirements
- Safely handle and move waste and debris
 - Minimize health and safety risks to self and others due to own actions
 - Monitor the workplace and work processes for potential risks and threats
 - Carry out periodic walkthrough to keep the work area free from hazards and obstructions, if assigned
 - Participate in mock drills/evacuation procedures organized at the workplace
 - Undertake first aid, fire-fighting and emergency response training, if asked to do so
 - Take action based on instructions in the event of fire, emergencies or accidents
 - Follow Cooperative Society/NGO/SHG procedures for evacuation when required

Practical Content:

Learning Outcome – Assessment Criteria

Outcomes to be assessed/NOSs to be assessed	Assessment criteria for the outcome
<p>1. Identify embroidery tools, machine and Prepare sample basic hand stitches (temporary & permanent stitch)</p>	<ul style="list-style-type: none"> • Identify embroidery tools. • Identify all parts of equipment and their accessories. • Clean all parts of equipment. • Plan and operate. • Identify basic faults and correct them. • Safety and maintenance. • Identify and use the embroidery tools safely. • Select raw material for temporary & permanent basic hand stitches. • Prepare a sample of temporary stitches such as basting even, basting uneven, diagonal, slip basting. • Prepare a sample of permanent stitches such as running, hemming slip, run & back, overcasting. • Explain the difference between temporary & permanent stitch • The sample should be properly finished and pressed.

<p>2 Demonstrate and prepare the sample in both techniques (hand and machine).</p>	<ul style="list-style-type: none"> • Identify and use pressing and embroidery tools with safety. • Select raw material, tools and equipment for tracing method. • Prepare a sample of running, back, satin and cross stitch by hand embroidery technique. • Prepare a sample of the same stitches by the computerized embroidery machine. • Explain the difference between hand embroidery and machine embroidery. • The sample should be properly finished and pressed
<p>3. Design Embroidery with suitable fabric using coral draw software. (Indian dresses, western dresses).</p>	<ul style="list-style-type: none"> • Open the software and do the required page set up for the design. • Identify and use suitable tools for designing. • Sketch the garment with a suitable fabric design. • Follow the designing principle. • Select the colours and colour combination • Apply colour using colour filling tools • Save the file in a folder and take the printout of the design using a colour printer
<p>4. Identify, Set up and troubleshoot the machine with the proper maintenance procedure.</p>	<ul style="list-style-type: none"> • Identify and use pressing and embroidery tools with safety • Decide the features and placement of the design (border, spray, corner, centre, link, etc) suitable for the part of the garment (sleeves, yokes, cuffs, neck, etc) • Draw the design using already installed by following the elements of the design • Apply suitable colours to the design by following the colour scheme • Press the garment part. Transfer design to the garment • Fix the garment part properly on the embroidery frame • Select suitable embroidery stitches for the design • Start embroidery and complete the design step by step by applying suitable stitches at the required portions • Remove the frame and trim the excess threads • Follow the safety instructions throughout the process • Machine oiling and maintenance • Troubleshoots the machine whenever required • Comply with the safe operating principle • Follow the safety instructions throughout the process

<p>5. Develop the skill to make computerizes design with the application of software.</p>	<ul style="list-style-type: none"> • Select correct needle, Pressing and Embroidery tools with safety • Open the software (Embroidery Software) and Select already install Design suitable for a Cushion Cover • Digitized and editing stitches • Apply suitable colours to the design • Decide the placement of the design in the fabric • Fix the cushion cover properly on the embroidery frame • Select suitable Machine embroidery stitches for the design • Do the upper and lower threading of the machine • Start embroidery and complete the design step by step by applying suitable stitches at the required portions • Remove the frame trim extra thread and press the cushion cover neatly • Follow safety precaution
<p>6. Setup computerized embroidery machine for transferring the image for all the digitizing process.</p>	<ul style="list-style-type: none"> • Open the software and do the required design • Identify and use suitable tools for designing • Sketch the garment with a suitable fabric design • Follow the designing principle • Select the colours and colour combination • Apply colour using colour filling tools • Decide the features and placement of the design • Fix the pillow cover properly on the embroidery frame • Select suitable Machine embroidery stitches for the design • Do the upper and lower threading of the machine • Start embroidery and complete the design step by step by applying suitable stitches at the required portions • Remove the frame trim extra thread and press the pillow cover neatly • Open the embroidery software and do the required design • Identify and use the tools for digitizing • Sketch the garment with a suitable fabric design • Follow the designing principle • Select suitable stitches for the design • Select the colours and colour combination • Apply colour using colour filling tools • Decide the features and placement of the design • Select correct needles, frame, scissor and thread • Fix the bed sheet properly on the embroidery frame • Do the upper and lower threading of the machine • Start embroidery and complete the design step by step by applying suitable stitches at the required portions • Maintain hygiene • Maintain safety expectations • Maintain quality as per requirement • Remove the frame trim extra thread and press the bed sheet neatly • Produce an estimate and cost sheet

<p>7. Identify, select and apply the digitizing design to prepare T-shirt and use various techniques e.g. Appliqué work, Sequins work, Taping work, Cording work, Chenille work.</p>	<ul style="list-style-type: none"> • Open the embroidery software and do the required design • Identify and use the tools for digitizing • Sketch the garment with a suitable fabric design • Follow the designing principle • Select suitable stitches for the design • Select the colours and colour combination • Apply colour using colour filling tools • Decide the features and placement of the design • Select correct needles, frame, scissor and thread • Fix the T-shirt properly on the embroidery frame • Do the upper and lower threading of the machine • Start embroidery and complete the design step by step by applying suitable stitches at the required portions • Maintain hygiene • Maintain safety expectations • Maintain quality as per requirement • Remove the frame trim extra thread and press the T-shirt neatly • Produce an estimate and cost sheet
	<ul style="list-style-type: none"> • Open the embroidery software and do the required design • Identify and use the tools for digitizing • Sketch the garment with a suitable fabric design • Follow the designing principle • Select suitable stitches for the design • Select the colours and colour combination • Apply colour using colour filling tools • Decide the features and placement of the design • Select correct needles, frame, scissor and thread • Fix the sari properly on the embroidery frame • Do the upper and lower threading of the machine • Start embroidery and complete designs. Use appliqué, sequins, taping, cording and chenille step by step by applying suitable stitches at the required portions • Maintain hygiene • Maintain safety expectations • Maintain quality as per requirement • Remove the frame trim extra thread and press the bed sheet neatly • Produce an estimate and cost sheet
<p>8. Demonstrate knowledge of health, safety and security at the workplace (Machine embroidery works)</p>	<ul style="list-style-type: none"> • Keep vigilance for potential risks and threats associated with the machine embroidery work and types of equipment used. Proper initiation and shutdown of the machine(s) at the beginning and closure of the day. • Ensure the tools and equipment like sewing machines, shears, needles, etc. are handled safely • Comply with health and safety-related instructions applicable to the workplace • Use and maintain personal protective equipment as per protocol • Carry out own activities in line with approved guidelines and procedures

	<ul style="list-style-type: none"> • Maintain a healthy lifestyle and guard against dependency on intoxicants • Follow environment management system related procedures • Store materials and tools in line with manufacturer s and Cooperative Society/NGO/SHG requirements • Safely handle and move waste and debris • Minimize health and safety risks to self and others due to own actions • Monitor the workplace and work processes for potential risks and threats • Carry out periodic walkthrough to keep the work area free from hazards and obstructions, if assigned • Participate in mock drills/evacuation procedures organized at the workplace • Undertake first aid, fire-fighting and emergency response training, if asked to do so • Take action based on instructions in the event of fire, emergencies or accidents • Follow Cooperative Society/NGO/SHG procedures for evacuation when required
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List of Tools & Equipment
Machine Embroidery (computerized) with CAD
(For a batch of 20 candidates)

S No.	Name of the Tools and Equipment	Specification	Quantity
A. TRAINEES TOOL KIT (consumable item)			
1.	Measuring Tape	150 cm	21 Nos.
2.	Seam Ripper		21 Nos.
3.	Thimble		21 Nos.
4.	Thread cutter		21 Nos.
5.	Colour plate		21 Nos.
6.	Colour brush	no. 00,1, 2.	21 Nos. each
7.	Scale plastic	12"	21 Nos.
8.	Compass		21 Nos.
9.	Hangers	Wooden hangers	21 Nos.
10.	Embroidery Ring	Size 1,2,3,4,5,6,7	21 Nos. each
11.	Stencil (Numerical and alphabets)	Different shapes & design	21 Nos. each
12.	Pick glass		21 Nos.
13.	Water colour		21 Nos.
14.	Eraser, Pencil, Sharpener		21 Nos.
B. MACHINE LABORATORY			
15.	Computerized embroidery machine	Multi-needle	10 Nos.
16.	Attachments/accessories		As required
17.	Trade-related software		04 Nos.
18.	Coral draw software		04 Nos.
19.	Computer system with UPS, Operating system, Antivirus and Internet	Latest Configuration	10 Nos.
20.	Printer		01 No.
21.	Scanner		01 No.
22.	Automatic Sewing Machine		02 Nos.
23.	Round table with step for embroidery machines		10 Nos.
24.	Automatic Electric Press		01 No.
25.	Dummy		02 Nos.
26.	Frames/hoops		01 Set

27.	Pinking scissors		05 Nos.
28.	Appliqué scissors		04 No.
29.	Cutting scissors		17 Nos.
30.	Trainees lockers (10 lockers)		02 Unit
31.	Wall clock		01 No.
32.	Calculator		01 No.
33.	White Magnetic Board & accessories		01 No.
34.	Display Board		01 No.
35.	Table & Chair set	For students & faculty	21 Set
36.	Computer set with UPS & multimedia projector		01 No.

Marks Distribution

Outcome	Outcome Code	Total Th Marks	Total Pr Marks
Identify embroidery tools, machine and Prepare sample basic hand stitches (temporary & permanent stitch)	APL/0302/OC1	20	80
Demonstrate and prepare the sample in both techniques (hand and machine).	APL/0302/OC2	20	80
Design Embroidery with suitable fabric using coral draw software. (Indian dresses, western dresses)	APL/0302/OC3	20	80
Identify, Set up and troubleshoot the machine with the proper maintenance procedure.	APL/0302/OC4	20	80
Develop the skill to make computerizes design with the application of software.	APL/0302/OC5	10	80
Setup computerized embroidery machine for transferring the image for all the digitizing process.	APL/0302/OC6	20	80
Identify, select and apply the digitizing design to prepare T-shirt and use various techniques e.g. Appliqué work, Sequins work, Taping work, Cording work, Chenille work.	APL/0302/OC7	20	90
Demonstrate knowledge of health, safety and security at the workplace (Machine embroidery works)	APL/0302/OC8	20	80
Work in real job situation (OJT)	APL/0302/OC9	0	150
Employability Skills- 60 hrs.	DGT/VSQ/N0102	50	0