Syllabus for Silk Screen Printing Operator

1	Qualification Title:	Sill	Screen Printi	ng Operator	
2	Qualification Code, if any -		- HAC /2021/2	~ .	
3	Job description of the occupation	The Silk Screen Printing operator selects van types of solutions and mixes them in proportion to create design on the screen b on the pattern need to be imposed on the object.			
4	Level of the qualification in the NSQF	Lev	el 03		
5	Anticipated volume of training/learning required to complete the qualification	600) Hours		
6	Entry requirements and/or Grade 10 recommendations and minimum age OR Grade 8 pass and pursuing continuous s in regular school with vocational subject OR Grade 8 Pass with 2 year experience OR Grade 8 Pass with 2 year experience OR Sth Grade Pass with 5 yrs experience				
7	Formal structure of the qualification Ma				
	Title of component and identification code/NOSs/Learning outcomes		Mandatory/ Optional	Estimated size (learning hours)	Level
1	Communicate with supervisor		Mandatory	30(T-10 P-20)	3
2	Arrange the required raw materials and ingredients		Mandatory	60(T-10 P-50)	3
3	Mix the ingredients and oxides to obtain th desired design colour pattern	ne	Mandatory	60(T-10 P-50)	3
4	Check colour quality and colour productive standards	ity	Mandatory	60(T-10 P-50)	3
5	Demonstrate the silk screen printing proce	ess	Mandatory	60(T-10 P-50)	3
6	Carry out reporting and documentation		Mandatory	30(T-10 P-20)	3
7	Ensure workplace safety and security SOP	s	Mandatory	30(T-10 P-20)	3
8	Carry adequate waste management		Mandatory	30(T-10 P-20)	3
9	Maintain practices for Personal Hygiene at workplace	;	Mandatory	30(T-10 P-20)	3
10	OJT / Field work		Mandatory	150 Hrs	3
11	Employability Skill (60 Hrs) as per NCVE	Г	Mandatory	60	3
Total Le	earning (Theory +Practical +ES+OJT) Hou	ırs:	600(90T+300) OJT/Field wor		

Title of component and identification code.	Mandatory/ Optional	Estimated size (learning hours)	Level
<u>I. Theory</u> Theory component of the course is to develop relevant basic technical information & knowledge about	Mandatory	90	3
<u>II.Practical</u> Institutional component of Practical training of the course is to impart relevant basic technical skills to	Mandatory	300	3
III.OJT / FIELD WORK OJT component of the course is to develop competency in the real work situation in an agriculture farm or any other place having facilities relevant to the trade with special emphasis on basic safety and hazards IV.EMPLOYABILITY SKILLS	Mandatory	150	3
Employability Skills component of the course is to impart Soft skills which include Communication Skills, Digital skill, Financial Entrepreneurship etc	Mandatory	60	3
Total (I+II+III)		600	

OUTCOMES

Outcomes to be assessed	Assessment criteria for the outcome
Module 1: Arrange the raw mate	rials and ingredients
1. Communicate with supervisor	1.1 Receive the job order and instructions from supervisor as per the SOP
	1.2 Coordinate with supervisor to seek clarification on design, production, maintenance and repair schedules at
	1.3 Assess the problems effectively and report if required to supervisor appropriately
	1.4 Convey to colleagues and line workers for appropriate work techniques and methods
	1.5 P lan and prioritize sequence of activities, work schedules and volume of production in coordination with
	1.6 Deliver timely the inspection reports of tools and equipment to supervisor as per SOP
2. Arrange the required raw materials and ingredients	2.1. List the raw materials and ingredients required for preparing the colour solution
	2.2. Arrange tools and equipment for processing the screen printing
	2.3. Examine the properties of frame with mesh based on the emulsion and design patterns
	2.4. Collect the required raw materials and ingredients from the store as per the prescribed quantities and labeling

	2.5. Place all the collected raw materials and ingredients at the work place
	2.6. Deliver the remaining raw material and ingredients at designated location as per the SOP with proper labelling that ensures traceability and identification
	3.1. Select the PPE required to handle the tools and equipment
to obtain the desired design colour pattern	3.2. Monitor the functioning of exposure unit to make
	stencils using UV light sensitive emulsion on the screen
	3.3. M ix the raw materials and ingredients in the container of prescribed volume and size
	3.4 Perform mixing operation as per the SOP to ensure
	appropriate colour formation is being achieved
	3.5 Examine the prepared colour composition based on color viscosity, oxides granules, nature of hue, and color
	saturation range
	3.6 Maintain and examine the overall functioning of the UV unit as per the standard operating procedures
	3.7 Turn off the exposure unit at the right interval of time
	3.8 Remove the prepared colour formulation from the container
	3.9 Clean tools and equipment after their use to prevent colour spots, stains and rust
4. Check colour quality and colour productivity standards	4.1 Compare the colour as per the colour quality standards during pre-heating or post heating operations
	4.2 Maintain records of inspection results and tests as per prescribed job sheet
	4.3. Review the periodical targets set by the supervisor
Module 2 Perform the silk screen	n printing operation
5. Demonstrate the silk screen printing process	5.1 Select the frame material based on the design pattern and specifications
	5.2 Place frame and screen in an appropriate manner for further processing
	5.3 Apply the SOPs to spread the emulsion across the mesh
	5.4 Ensure that the screen is placed on the top side on design is placed in a closed vacuum surface
	5.5 Place the weight of appropriate quantity to give additional strength for further processing
	5.6. Perform the emulsion process through exposure unit
	5.7. Ensure that edges of the frame are properly taped to avoid moisture and leakage
	5.8. Attach the screen to print bench and the material to be printed on bottom of the screen

	5.9. Apply good quantity of ink required to spread across the screen
	5.10. Perform the squeezing with squeezing blade helps to spread the ink over the mesh and the design is imprinted
	5.11. Perform the same steps to obtained the multiple copies of the design colour patterns
6.Carry out reporting and	6.1. Maintain documentation including periodic working
documentation	6.2. Ensure that documents are available for all the appropriate authorities for inspection
	6.3. Enhance productivity by adopting several appropriate measures like automation, motivation, process planning, resource planning etc.
	6.4. Ensure that work area and tools are cleaned and inspected according to workplace procedures
	6.5. Prepare sample report carrying all the working schedules and day to day activities
Module 3 : Maintain Health, H	ygiene and Safety at Workplace
	7.1 Outline the health, safety and security policies at workplace to avoid workplace for potential risks and threats
7. Ensure workplace safety and security SOPs	7.2 Follow adequate safety standards while handling materials, chemicals, tools, and electrical equipment
	7.3 Sanitize hands at regular intervals using hand wash & alcohol-based sanitizers
	7.4 Clean the workplace using sanitizers and keep it free from dust, waste and spillage
	7.5 Ensure that personal protective equipment is available at the workplace at all time
	7.6 Follow first procedures during emergencies situations at the workplace
	7.7 Pactice the appropriate measures to make yourself in a calm way while dealing with accidents, emergencies and in illness, fires or any other natural calamity
8. Carry adequate waste management	8.1 Employ standard procedures of waste disposal and waste storage in the proper containers as per SOP
	8.2 Place the used PPEs in a designated bag, sealed and labelled as contagious waste
	8.3 Segregate the recycled and non-recycled wastes as per SOP
9. Maintain practices for Personal Hygiene at workplace	9.1 Take appropriate health and hygiene procedures at the workplace to avoid injuries and health issues
	9.2 Maintain social distancing in social gatherings at the workplace
	9.3 Use mask at the workplace to prevent mouth and nose from dust particles and dangerous bacteria

	9.4 Identify health concerns like fever, cold & cough, etc. for self, colleague and other family members
	9.5 Report any flu-like symptoms, fever, diarrhoea, sore throat, constant sneezing, coughing, runny nose and vomiting to the supervisor
	9.6 Undergo preventive health check-ups at regular intervals as per the SOP
10. OJT / Field Work	(10.1) Assessor will check report prepared for this component of 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 for 300 Hours.)
11. Employability Skill (60 Hrs)	As per NCVET guided course module for 60 Hrs

Details of Theory & Practical Syllabus

SI.	CONTENT	DETAILS	HOURS			
No						
1	Communicate with supervisor					
	Theory	 explain standard procedures to be followed while receiving the job order and instructions from reporting supervisor explain standard operating procedures to be followed to resolve doubts on design, usage of material & tools, quality & standards compliance, etc. to team members at workplace identify the ways to enhance the level of empathy across genders while giving assistance to colleagues at the workplace Discuss the importance of preparing the records based on standard organizational parameters in order to achieve production as per the periodic schedules 	10			
	Practical	 Apply the standard operating procedures in order to analyze the job specifications based on the parameters based on size, shape, pattern and art work design Demonstrate the washing process as per standard procedures in order to make the fabric dust and dirt free for further processing Perform visual inspection process in order to check the fabric is dried completely based on standard parameters Perform the standard operating procedures while marking the layout in order to meet the desired design specifications 	20			
<u>2</u>	Arrange the required	raw materials and ingredients				

	-	1		
	<u>Theory</u>	1.	describe the process of handling clean material, tool and equipment at workplace	10
		2.		
			and ingredients in prescribed quantities to achieve the	
			desired colour solution	
		3.		
			numbering while maintaining reports and records	
	Practical	1.	demonstrate usage of tools and equipment for further	50
			processing	
		2.	perform standard operating procedures to be followed while	
			collecting raw materials and ingredients in prescribed quantities from the designated storage location	
		3.	demonstrate the organizational SOPs required to place the	
			raw materials and ingredients at workplace for further	
			processing	
		4.	· · · · · · · · · · · · · · · · · · ·	
			delivering the remaining and unused material at the	
		-	designated storage location	
		5.	choose the suitable PPE based on the prescribed Job Sheet at the workplace	
3	Mix the ingredients a	and oxide	es to obtain the desired design colour pattern	
	Theory	1.	describe the importance of using PPE at the time of handling	10
			tools and equipment at workplace	
		2.	Identify the parameters required for inspection process in	
			the prepared colour solution to check the quality and	
			density	
	Practical	1.	follow standard operating procedures to monitor the	50
			functioning of exposure unit based on time duration,	
			pressure, volume, and colour formulation density	
		2.		
		2	ingredients in the container of prescribed volume and size	
		3.	examine the overall functioning of exposure unit from setting up for the prescribed operation and turn off after	
			regular interval of time	
		4.	demonstrate the standard operating procedures to be	
			followed while removing or unloading the colour	
			formulation from the container	
		5.	prepare a sample format /template to collect information	
		6	during inspection	
		6.	during inspection based on colour viscosity, oxide granules, nature of hue and	
			during inspection based on colour viscosity, oxide granules, nature of hue and colour saturation range	
			during inspection based on colour viscosity, oxide granules, nature of hue and colour saturation range ensure that work area and tools are cleaned and inspected	
			during inspection based on colour viscosity, oxide granules, nature of hue and colour saturation range	
<u>4</u>	Check colour quality	7.	during inspection based on colour viscosity, oxide granules, nature of hue and colour saturation range ensure that work area and tools are cleaned and inspected	
<u>4</u>	Check colour quality	7. and colo	during inspection based on colour viscosity, oxide granules, nature of hue and colour saturation range ensure that work area and tools are cleaned and inspected according to workplace procedures our productivity standards explain how to monitor the workplace and work processes	10
<u>4</u>		7. and colo	during inspection based on colour viscosity, oxide granules, nature of hue and colour saturation range ensure that work area and tools are cleaned and inspected according to workplace procedures Fur productivity standards explain how to monitor the workplace and work processes for potential risks and threats	10
4		7. and colo	during inspection based on colour viscosity, oxide granules, nature of hue and colour saturation range ensure that work area and tools are cleaned and inspected according to workplace procedures nur productivity standards explain how to monitor the workplace and work processes for potential risks and threats discuss the parameters that indicate deviation in the	10
<u>4</u>		7. and colo	during inspection based on colour viscosity, oxide granules, nature of hue and colour saturation range ensure that work area and tools are cleaned and inspected according to workplace procedures Fur productivity standards explain how to monitor the workplace and work processes for potential risks and threats	10

			followed to examine the colour productivity standards	
	Duestical	1	demonstrate the CODs that are non-ired to should the	50
	<u>Practical</u>	2. 3. 4.	demonstrate the SOPs that are required to check the prepared solution during the process based on its colour saturation properties carry adequate safety measures while handling materials, chemicals, and tools perform the standard thermal procedures to examine the exposure unit temperature based on the results as per the job sheet prepare the sample template that indicate all the standard results achieved during this operation review the periodic schedules based on that productions rate can be evaluated after the regular interval of time as	50
		6.	per SOP. demonstrate the process of proper labelling mechanism of instruments/ boxes/ containers and maintaining reference files/documents with the codes and the lists	
<u>5</u>	Demonstrate the silk	screen p	printing process	
	Theory	2. 3.	explain the importance of selecting the frame as per standard parameters such as material, pattern, size and dimensions based on design specifications discuss the schedule of working with supervisor prior to perform silk screen printing operation discuss the repetition of the process to achieved uniform results on the object discuss the importance of using gloves as per the materials used for making handicraft to avoid blisters; scratches and cuts	10
	Practical	2. 3. 4. 5. 6. 7. 8.	follow the SOP while placing the frame and screen at the work station for further processing demonstrate the process of apply the emulsion across the mesh as per the prescribed quantity and design specifications ensure that the screen is placed on the top side on design is placed in a closed vacuum surface follow SOPs while placing the weight of appropriate volume on the frame in order to provide additional strength perform the emulsion process by UV exposure unit as per the standard safety procedures examine the edges of the frame are tightly taped to prevent from moisture and leakage demonstrate the process of placing the ink as per the prescribed quantity on the screen perform the squeezing with squeezing blade helps to spread the ink over the mesh and the design is imprinted repeat the same steps to obtained the multiple copies of the design colour pattern	50
<u>6</u>	Carry out reporting a		mentation	
<u>×</u>	Theory		identify the parameters required for the inspection process in printing manufacturing unit	10

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		2.	list the different quality parameters to be checked in the silk screen printing operation	
		3.	List the parameters to be included while maintaining a master record book	
	<u>Practical</u>		apply standard operating procedures to prepare periodic working schedules based on the current market preference describe the importance of implementing innovations/ new ideas and processes within organizational standards maintain and follow the periodic schedule of servicing of machines, tools and equipment to reduce the maintenance and enhance the capacity at the workplace	20
		4. 5.	prepare a sample format /template to collect information during inspection based on the operational parameters that required in making the final product perform the SOPs to carry the servicing and maintenance records of tools and equipment and machines	
<u>7.</u>	Ensure workplace sat	fety		
	<u>Theory</u>		describe the health and safety related instructions applicable to the workplace explain how to monitor the workplace and work processes for potential risks and threats	10
		3.	discuss workplace hygiene, sanitation and job specific safety procedures	
	<u>Practical</u>	3. 4.	demonstrate how to clean and maintain the cleanliness of the work area using approved sanitizers to keep it free from dust, waste, and spillage carry adequate safety measures while handling materials, chemicals, and tools apply standard operating procedures to clean the tools and equipment used with recommended sanitizers following specifications and organizational standards report any accidents, incidents or problems without delay to the supervisor and take necessary immediate participate actively in employee work groups on 5s and encourage team members for active participation	20
8	Carry adequate wast	e manag	ement	
<u>8</u>	Theory	e manag	· · · ·	10
			designated area at workplace list the important preventive measures in order to preserve the resources at workplace	-
		3.	discuss the safety measures to be followed while handling and moving waste and debris	

	<u>Practical</u>	2. 3. 4.	selected colour bins apply the SOPs while segregating the recycled and non- recycled waste and debris demonstrate the standard sanitization protocols with alcohol based disinfects at the designated location where waste are disposed at regular interval of time	20
<u>9</u>	-		al Hygiene at workplace	
	<u>Theory</u>	2. 3.	explain the importance of organizing cyclic sessions at the workplace to create awareness on the usage of appropriate health-related equipment in case of any emergency identify common types of injuries that might occur and affect the participant's at the workplace emergencies at work identify basic health concerns like fever, cold & cough, etc. for self, colleague and other family members	10
		4.	discuss the importance of using a dust mask at the workplace to prevent mouth and nose from dust particles and dangerous bacteria	
	<u>Practical</u>	2. 3.	discuss the importance of using gloves as per the materials used for working printing operations to avoid blisters; scratches and cuts demonstrate different ways in case of an emergency at home and use of emergency helpline numbers etc. follow SOPs at workplace related to health and hygiene such as social distancing, sanitization and cleanliness apply the SOPs to organize the preventive health check-ups at regular interval of time demonstrate the appropriate SOPs required to clean the work place, tools and equipment, machines, uniforms etc. at regular interval of time in order to avoid any injury or infection	20

OJT/ Field Work: 150 Hrs.

OJT component of the course is to develop competency in the real work situation in an agriculture farm or any other place having facilities relevant to the trade with special emphasis on basic safety and hazards

Detail of Employability Skills Syllabus: 60 hours

Employability Skills (60 hours)

Model Curriculum

Module Summary:

S. No	Module Name	Duration (hours)	Assessment Marks
1.	Introduction to Employability Skills	1.5	2
2.	Constitutional values - Citizenship	1.5	2
3.	Becoming a Professional in the 21st Century	2.5	6
4.	Basic English Skills	10	6
5.	Career Development & Goal Setting	2	3
6.	Communication Skills	5	4
7.	Diversity & Inclusion	2.5	2
8.	Financial and Legal Literacy	5	5
9.	Essential Digital Skills	10	8
10.	Entrepreneurship	7	4
11.	Customer Service	5	3
12.	Getting Ready for Apprenticeship & Jobs	8	5
	Total	60	50

Key Learning Outcomes

Introduction to Employability Skills Duration: 1.5 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: 1.5 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: 2.5 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: 2.5 Hours

- 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: 7 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: 5 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: 8 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

Assessment Strategy

The trainee will be tested for the acquired skill, knowledge and attitude through formative/summative assessment at the end of the course and as this NOS and MC is adopted across sectors and qualifications, the respective AB can conduct the assessments as per their requirements.

LIST OF TOOLS & EQUIPMENT FOR EMPLOYABILITY SKILLS					
S No.	Name of the Equipment	Quantity			
1.	Computer (PC) with latest configurations – and Internet connection with standard operating system and standard word processor and worksheet software (Licensed) (all software should either be latest version or one/two version below)	As required			
2.	UPS	As required			
3.	Scanner cum Printer	As required			
4.	Computer Tables	As required			
5.	Computer Chairs	As required			
6.	LCD Projector	As required			
7.	White Board 1200mm x 900mm	As required			
Note: Above Tools & Equipment not required, if Computer LAB is available in the institute.					

Marks Distribution

Outcomes	Outcomes Code	Total Th marks	Total Pr marks	Total OJT marks
Communicate with supervisor	HAC/1503/OC1	20	40	0
Arrange the required raw materials and ingredients	HAC/1503/OC2	20	80	0
Mix the ingredients and oxides to obtain the desired design colour pattern	HAC/1503/OC3	20	80	0
Check colour quality and colour productivity standards	HAC/1503/OC4	20	80	0
Demonstrate the silk screen printing process	HAC/1503/OC5	20	80	0
Carry out reporting and documentation	HAC/1503/OC6	20	40	0
Ensure workplace safety and security SOPs	HAC/1503/OC7	10	40	0
Carry adequate waste management	HAC/1503/OC8	10	40	0
Maintain practices for Personal Hygiene at workplace	HAC/1503/OC9	10	20	0
ОЈТ	HAC/1503/OC10	0	0	300
Employability SKill	DGT/VSQ/N0102	50	0	0