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TEXTILE WET PROCESSING

TRAINER GUIDE

National Vocational Certificate Level 3

Version 1 - November, 2019

NAVTTC

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The transfer gap between the training environment and working on the job is reduced substantially in a competence-based approach. This is because training and assessment are relevant to what needs to be done on the job. As a result, it takes less time for trainees to become competent in the required areas. This, in turn, contributes to improved efficiency where training and assessment are concerned.

3. **Increased productivity**

   When trainees become competent in the competence standards that their own industry has defined, when they know what the performance expectations are and receive recognition for their abilities through successful assessments, they are likely to be more motivated and experience higher job satisfaction. The result is improved productivity for organizations. The communication and constructive feedback between future employers and employees will improve as a result of a competence-based approach, which can also increase productivity.

4. **Reduced risk**

   Using a competence-based approach to training, development, and assessment, employers are able to create project teams of people with complementary skills. A trainee's record of the skills, knowledge and understanding relating to the competence standards they have achieved can be used by a future employer to identify and provide further relevant training and assessment for new skills areas. Competence standards can shape employee development and promotional paths within an organization and give employees the opportunity to learn more competencies beyond their roles. It can also provide organizations with greater ability to scale and flex as needed, thereby reducing the risk they face.

5. **Increased customer satisfaction**

   Employees who have been trained and assessed using a competence-based approach are, by the definition of the relevant competence standards, able to perform the required tasks associated with a job. The knock-on effect is that, in service-related industries, they are able to provide high service levels, thereby increasing customer satisfaction. In production or manufacturing industries, they are able to work closely to industry standards in a more effective and efficient way.

Lesson plans

This manual provides a series of lesson plans that will guide delivery of each module for the *Textile Wet Processing* qualification. It is important for trainers to be flexible and be ready to adapt lesson plans to suit the context of the subject and the needs of their trainees.

Good teachers acknowledge that CBT means each and every trainee in the class learns at a different speed. The good teacher is prepared to throw aside the day's lesson plan and do something different (and unplanned) for the class even if it means 'writing' a lesson plan for each trainee to match their learning pace for that day or week.

Learning by doing is different from learning theory and then applying it. To learn to do something, trainees need someone looking over their shoulder saying ‘it’s not quite like that, it’s like this’, ‘you do it like this because …’, or even ‘tell me why you chose to do it like this?’.

In this way, trainees learn that theoretical knowledge is meaningless if it is not seen in the context of what they are doing. In other words, if a trainee doesn’t know why they do something, they will not do it competently (skills underpinned by knowledge = competent performer).

This is how a *Textile Wet Processing* (Dyeing technologist) acquires a practical grasp of the standards expected. It’s not by learning it in theory, but because those standards are acquired through correction by people who show what the standards are, and correct the trainee where they do not meet those standards, and where they repeat it correction until they have internalized those standards.

FORMAT FOR LESSON PLAN			
Module: Carry out laboratory testing of dyeing process			
Learning Unit 2: Perform Physical lab testing			
Methods	Key Notes The tools, material and techniques used for performing physical lab testing	Media	Time
	Introduction		
	This session will introduce learners to the tools, techniques and material used for performing physical lab testing using presentation, demonstration, question and answer, and practical skills development.		
	Main Body		
	• Identification of yarn, types of yarn and calculating methods for yarn count. • Types of fabric construction and finding picks per inch. • Differentiate between woven and knitted fabric and their principles of dyeing. • Testing of sample by using quality standards as per requirement of buyer. • Principles of testing methods according to the AATTC / ISO / ASTM standards. • Importance of color fastness tests and its effect on production quality. • The importance of using a spectrophotometer for shade identification and matching with standards. • Calculating the GSM and its effect on fabric weight and liquor ratio. • Working independently • Compliance with relevant regulations and standards		
	Conclusion		

	To conclude the session, review the tools, techniques and material used for performing physical lab testing. Give learners the opportunity to ask questions.
	Assessment Question and answer, discussion groups with feedback, observation of practice skills development
	Total time:

Demonstration of skill

Demonstration or modeling a skill is a powerful tool, which is used, in vocational training. The instructions for trainers for demonstration are as under:

a) Read the procedure mentioned in the Trainer Guide for the relevant Learning Unit before demonstration.
b) Arrange all tools, equipment and consumable material, which are required for demonstration of a skill.
c) Practice the skill before demonstration to trainees, if possible.
d) Introduce the skill to trainees clearly at the commencement of demonstration.
e) Explain how the skill relates to the skill(s) already acquired and describe the expected results or show the objects to trainees.
f) Carry out demonstration in a way that can be seen by all trainees.
g) Perform each step slowly and describe each step clearly so that all trainees can hear and understand.
h) Identify critical or complex steps, or steps that involve safety precautions to be followed.
i) Explain theoretical knowledge where applicable and ask questions to trainees to test their understanding.
j) Repeat critical steps in demonstration, if required.

Summarize the demonstration by asking questions to trainee.

Overview of the program

Course: NVQ Certificate Level 3 in *Textile Wet Processing* (Dyeing Technologist)	**Total Course Duration:** 670 hours
Course Overview:	
The Textile Sector- *Textile Wet Processing* (Dyeing Technologist) program is to engage young people with a program of development that will provide them with the knowledge, skills and understanding to start this career in Pakistan. The program has been developed to address specific dyeing processes, such as exhaust method for woven & knitted fabrics, continuous method, semi-continuous method and laboratory quality testing, the manpower availability within the country, and meeting and exceeding the needs and expectations of their customers.	

Trainer's guidelines

Module: 0723001101 Carry out Exhaust Dyeing for Woven Fabrics.			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
LU1: **Follow Dyeing Plan for woven fabric dyeing by exhaust process**	Begin this session with an illustrative presentation about the dyeing plan for performing dyeing of woven fabrics by exhaust dyeing method. Include examples of: • Type of dyeing machine use for dyeing the woven fabrics. • Difference between exhaust dyeing machines for woven fabrics dyeing. • Nature of different dyes, chemicals and auxiliaries used for exhaust dyeing of woven fabrics. • Identification of RFD (ready for dyeing) woven fabric to be processed. • Identification of shade and methods of shade matching. • Availability of materials required for dyeing operations. • working independently • compliance with relevant regulations and standards Arrange learners into small groups. Ask each group to discuss the importance of being able to independently follow the dyeing plan for woven fabric dyeing by exhaust method	Class Room Dyeing Workshop.	Learner guide Handouts Presentation Videos Illustrations from catalogues or the internet

Module: 0723001101 Carry out Exhaust Dyeing for Woven Fabrics.			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
	and present **THREE** situations that illustrate their discussion. Learners must be able to practice and develop their knowledge and skills relating to follow-up dyeing plan for woven fabrics dyeing by exhaust dyeing method in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding. Take verbal feedback from each group.		
LU2: **Prepare and ensure woven fabric dyeing parameters for exhaust dyeing**	Deliver an illustrative presentation on the setting of dyeing parameters for exhaust method independently to dye the woven fabric. Ensure that the presentation addresses the following points: • Identification of woven fabric construction and quality. • Calculation of dyes, chemicals and auxiliaries for dyeing operations. • sequencing the operations performed correctly • ensuring the correct dyes, chemicals and auxiliaries usage. • Setting the dyeing and machine parameters like dye weight, chemical pH, liquor ratio, temperature, weight and length of fabric etc. • Handling techniques for tools and equipments. • verifying the condition of machines for exhaust dyeing. • Ensure that all parts of machine are in working condition for dyeing. • Methods of loading and un-loading of fabric to the exhaust dyeing machine. • setting of machine speed according to the nature of dyeing and fabric quality. • Types of possible dyeing defects during operations	Class Room Workshop. Visit dyeing industries	Learner guide Videos for related knowledge on multimedia Handouts

Module: 0723001101 Carry out Exhaust Dyeing for Woven Fabrics.			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
	and their possible remedies. • Quality requirements following dyeing the fabric. • working independently • compliance with relevant regulations and standards After the presentation, invite trainees to pose questions to the invited operator that will clarify their understanding. Ask the learner group to work in pairs to discuss the key points of using equipment and multi-stage methods independently to dye the woven fabrics. Following the pairs discussion, link two pairs together and ask each pair to share their findings. The trainer then needs to demonstrate the parameters for exhaust dyeing machines to learners. Where facilities exist at the training provider's premises, enable learners to practice using the appropriate tools, equipment, dyes and chemicals in a controlled environment.		
LU3: **Identify shade by using shade matching method for woven fabrics**	Lead a discussion on identification of shade and shade matching for dyeing of woven fabrics by exhaust method. Ensure that the discussion addresses the following points: • the importance of using the correct tools and equipment for shade matching. • Importance of pantone book. • the principles of shade matching for woven fabric. • the importance of using a spectrophotometer for shade identification and matching with standards. • working independently • compliance with relevant regulations and standards Arrange learners in different pairs. Ask each pair to devise 5 questions with correct answers about identification of shade and shade matching. Hold a quiz for the group using the	Dyeing Workshop. Classroom	Learner Guide Pantone Book Handouts Presentations Videos

Module: 0723001101 Carry out Exhaust Dyeing for Woven Fabrics.			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
	questions devised by each pair. Learners must be able to practice and develop their knowledge and skills relating to shade and shade matching methods in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU4: **Perform Dyeing**	Invite an experienced exhaust dyeing supervisor from industry to deliver a presentation to trainees about using proper exhaust dyeing machine independently to dye woven fabrics. Ask the invited supervisor to address the following key points: • selecting the proper exhaust machine for woven fabric dyeing according to dyeing plan. • Importance of safety precautions according to job requirement. • Identification of woven fabric for exhaust dyeing process. • sequencing the appropriate multi-stage process for exhaust dyeing correctly • the importance of using the correct tools and equipment. • weighing and measuring dyes, chemicals and auxiliaries accurately • quality requirements following dyeing the woven fabric by exhaust method. • working independently • compliance with relevant regulations and standards After the presentation, invite trainees to pose questions to the invited supervisor that will clarify their understanding. The teacher / invited supervisor then need to demonstrate dyeing process to learners. Where facilities exist at the	Classroom Dyeing Workshop Visit dyeing industries	Learner's guide Videos Presentations Handouts

Module: 0723001101 Carry out Exhaust Dyeing for Woven Fabrics.			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
	training provider's premises, enable learners to practice using the appropriate tools and equipment for dyeing process in a controlled environment.		
LU5: **Verify quality of woven fabric dyeing by exhaust process**	Lead a brainstorm on ways to ensure and verify the quality of dyeing process at each step. List the brainstorm ideas on a flipchart. If necessary, prompt learners to consider the following: • Operational knowledge and understanding of exhaust dyeing machines like winch, jigger and jet. • Verifying the point of quality parameters like pH, temperature, TDS, liquor ratio etc before and during the dyeing process. • Corrective action required for maintaining the quality of dyeing process. • Monitoring the shade and shade variation during dyeing process. • Problems that may arise in the specific steps of the dyeing process. • Physically inspection of dyeing process independently. After the brainstorm, review the range of ideas and clarify any issues arising. Provide trainees with a handout of the main points arising from the brainstorm. Learners must be able to practice and develop their knowledge and skills relating to verify quality of woven fabric dyeing by exhaust process in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.	Dyeing QC Lab Visit dyeing industries Classroom	Learner's guide Videos Presentations Handouts
LU6: **Prepare production**	Trainees need to practice their skills in independently for preparing the production report for woven fabric dyeing by exhaust process after job completed in a realistic	Classroom Dyeing workshop	Learner's guide Learner self-assessment

Module: 0723001101 Carry out Exhaust Dyeing for Woven Fabrics.			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
report for woven fabric dyeing by exhaust process	environment. After the practical sessions are complete, lead a feedback session. Ask learners to complete a self-assessment form on their ability to prepare production report, record all dyeing and machine process parameter's time and faults occurred during production. After the discussion, begin the feedback session. Ask one group to share the main points they have recorded for the first key topic for preparing production report for woven fabric dyeing by exhaust process. Discuss these main points briefly with the whole group. Learners should make additional notes to record additional points their group had not identified. Then ask the next group to share the main points they have recorded for the second key topic. Repeat the discussion process. Continue until you have covered all the key topics. End the group discussion activity with a summary.		forms

Module : 0723001102 Carry out Exhaust Dyeing for Knitted Fabrics.			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
LU1. **Follow Dyeing Plan for Knitted fabric dyeing by exhaust process**	Begin this session with an illustrative presentation about the dyeing plan for performing dyeing of knitted fabrics by exhaust dyeing method. Include examples of: • Type of dyeing machine use for dyeing the knitted fabrics. • Difference between exhaust dyeing machines for knitted fabrics dyeing. • Nature of different dyes, chemicals and auxiliaries used for exhaust dyeing of knitted fabrics. • Identification of RFD (ready for dyeing) knitted fabric to be processed. • Identification of shade and methods of shade matching. • Availability of materials required for dyeing operations. • working independently • compliance with relevant regulations and standards Arrange learners into small groups. Ask each group to discuss the importance of being able to independently follow the dyeing plan for knitted fabric dyeing by exhaust method and present **THREE** situations that illustrate their discussion. Learners must be able to practice and develop their knowledge and skills relating to follow-up dyeing plan for knitted fabrics dyeing by exhaust dyeing method in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding. Take verbal feedback from each group.	Class Room Dyeing Workshop.	Learner guide Handouts Presentation Videos Illustrations from catalogues or the internet
LU2: **Prepare and ensure**	Deliver an illustrative presentation on the setting of dyeing parameters for exhaust method independently to dye the knitted fabric. Ensure that the presentation addresses the	Class Room Workshop.	Learner guide Videos for related knowledge on

Module : 0723001102 Carry out Exhaust Dyeing for Knitted Fabrics.			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
knitted fabric dyeing parameters for exhaust dyeing	following points: • Identification of knitted fabric construction and quality. • Calculation of dyes, chemicals and auxiliaries for dyeing operations. • sequencing the operations performed correctly • ensuring the correct dyes, chemicals and auxiliaries usage. • Setting the dyeing and machine parameters like dye weight, chemical pH, liquor ratio, temperature, weight and length of fabric etc. • Handling techniques for tools and equipments. • verifying the condition of machines for exhaust dyeing. • Ensure that all parts of machine are in working condition for dyeing. • Methods of loading and un-loading of fabric to the exhaust dyeing machine. • setting of machine speed according to the nature of dyeing and fabric quality. • Types of possible dyeing defects during operations and their possible remedies. • Quality requirements following dyeing the fabric. • working independently • compliance with relevant regulations and standards After the presentation, invite trainees to pose questions to the invited operator that will clarify their understanding. Ask the learner group to work in pairs to discuss the key points of using equipment and multi-stage methods independently to dye the knitted fabrics. Following the pairs discussion, link two pairs together and ask each pair to share their findings.	Visit dyeing industries	multimedia Handouts

Module : 0723001102 Carry out Exhaust Dyeing for Knitted Fabrics.			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
	The trainer then needs to demonstrate the parameters for exhaust dyeing machines to learners. Where facilities exist at the training provider's premises, enable learners to practice using the appropriate tools, equipment, dyes and chemicals in a controlled environment.		
LU3: **Identify shade by using shade matching method for Knitted fabrics**	Lead a discussion on identification of shade and shade matching for dyeing of knitted fabrics by exhaust method. Ensure that the discussion addresses the following points: • the importance of using the correct tools and equipment for shade matching. • Importance of pantone book. • the principles of shade matching for knitted fabric. • the importance of using a spectrophotometer for shade identification and matching with standards. • working independently • compliance with relevant regulations and standards Arrange learners in different pairs. Ask each pair to devise 5 questions with correct answers about identification of shade and shade matching. Hold a quiz for the group using the questions devised by each pair. Learners must be able to practice and develop their knowledge and skills relating to shade and shade matching methods in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.	Dyeing Workshop. Classroom	Learner Guide Pantone Book Handouts Presentations Videos
LU4: **Perform Dyeing**	Invite an experienced exhaust dyeing supervisor from industry to deliver a presentation to trainees about using proper exhaust dyeing machine independently to dye knitted fabrics. Ask the invited supervisor to address the following key points:	Classroom Dyeing Workshop Visit dyeing industries	Learner's guide Videos Presentations Handouts

Module : 0723001102 Carry out Exhaust Dyeing for Knitted Fabrics.			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
	• selecting the proper exhaust machine for knitted fabric dyeing according to dyeing plan. • Importance of safety precautions according to job requirement. • Identification of knitted fabric for exhaust dyeing process. • sequencing the appropriate multi-stage process for exhaust dyeing correctly • the importance of using the correct tools and equipment. • weighing and measuring dyes, chemicals and auxiliaries accurately • quality requirements following dyeing the knitted fabric by exhaust method. • working independently • compliance with relevant regulations and standards After the presentation, invite trainees to pose questions to the invited supervisor that will clarify their understanding. The teacher / invited supervisor then need to demonstrate dyeing process to learners. Where facilities exist at the training provider's premises, enable learners to practice using the appropriate tools and equipment for dyeing process in a controlled environment.		
LU5: **Verify quality of Knitted fabric dyeing by exhaust process**	Lead a brainstorm on ways to ensure and verify the quality of dyeing process at each step. List the brainstorm ideas on a flipchart. If necessary, prompt learners to consider the following: • Operational knowledge and understanding of exhaust dyeing machines like winch and soft flow. • Verifying the point of quality parameters like pH, temperature, TDS, liquor ratio etc before and during	Dyeing QC Lab Visit dyeing industries Classroom	Learner's guide Videos Presentations Handouts

Module : 0723001102 Carry out Exhaust Dyeing for Knitted Fabrics.			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
	the dyeing process. • Corrective action required for maintaining the quality of dyeing process. • Monitoring the shade and shade variation during dyeing process. • Problems that may arise in the specific steps of the dyeing process. • Physically inspection of dyeing process independently. After the brainstorm, review the range of ideas and clarify any issues arising. Provide trainees with a handout of the main points arising from the brainstorm. Learners must be able to practice and develop their knowledge and skills relating to verify quality of knitted fabric dyeing by exhaust process in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU6: **Prepare production report for Knitted fabric dyeing by exhaust process**	Trainees need to practice their skills in independently for preparing the production report for knitted fabric dyeing by exhaust process after job completed in a realistic environment. After the practical sessions are complete, lead a feedback session. Ask learners to complete a self-assessment form on their ability to prepare production report, record all dyeing and machine process parameter's time and faults occurred during production. After the discussion, begin the feedback session. Ask one group to share the main points they have recorded for the first key topic for preparing production report for knitted fabric dyeing by exhaust process. Discuss these main points briefly with the whole group. Learners should make additional notes	Classroom Dyeing workshop	Learner's guide Learner self-assessment forms

Module : 0723001102 Carry out Exhaust Dyeing for Knitted Fabrics.			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
	to record additional points their group had not identified. Then ask the next group to share the main points they have recorded for the second key topic. Repeat the discussion process. Continue until you have covered all the key topics. End the group discussion activity with a summary.		

Module : 0723001103 Carry out Semi-Continuous Dyeing			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
LU1: Follow Dyeing Plan for semi-continuous dyeing	Begin this session with an illustrative presentation about the dyeing plan for performing dyeing of fabrics / substrate by semi-continuous dyeing method. Include examples of: • Type of dyeing machine use for dyeing the fabrics / substrate. • Difference between semi-continuous and continuous dyeing machines. • Nature of different dyes, chemicals and auxiliaries used for semi-continuous dyeing of fabrics / substrate. • Identification of RFD (ready for dyeing) fabric to be processed. • Identification of shade and methods of shade matching. • Availability of materials required for dyeing operations. • working independently • compliance with relevant regulations and standards Arrange learners into small groups. Ask each group to discuss the importance of being able to independently follow the dyeing plan for fabric dyeing by semi-continuous method and present **THREE** situations that illustrate their discussion. Learners must be able to practice and develop their knowledge and skills relating to follow-up dyeing plan for fabrics dyeing by semi-continuous dyeing method in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.	Class Room Dyeing Workshop.	Learner guide Handouts Presentation Videos Illustrations from catalogues or the internet

Module : 0723001103 Carry out Semi-Continuous Dyeing			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
	Take verbal feedback from each group.		
LU2: **Prepare and ensure dyeing parameters for semi-continuous dyeing**	Deliver an illustrative presentation on the setting of dyeing parameters for semi-continuous method independently to dye the woven fabric. Ensure that the presentation addresses the following points: • Identification of fabric construction and quality. • Calculation of dyes, chemicals and auxiliaries for dyeing operations. • sequencing the operations performed correctly • ensuring the correct dyes, chemicals and auxiliaries usage. • Setting the dyeing and machine parameters like dye weight, chemical pH, pick-up, temperature, weight and length of fabric etc. • Handling techniques for tools and equipments. • verifying the condition of machines for semi-continuous dyeing. • Ensure that all parts of machine are in working condition for dyeing. • Methods of loading and un-loading of fabric to the semi-continuous dyeing machine. • setting of machine speed according to the nature of dyeing and fabric quality. • Types of possible dyeing defects during operations and their possible remedies. • Quality requirements following dyeing the fabric. • working independently • compliance with relevant regulations and standards After the presentation, invite trainees to pose questions to the invited operator that will clarify their understanding.	Class Room Workshop. Visit dyeing industries	Learner guide Videos for related knowledge on multimedia Handouts

Module : 0723001103 Carry out Semi-Continuous Dyeing			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
	Ask the learner group to work in pairs to discuss the key points of using equipment and multi-stage methods independently to dye the fabrics. Following the pairs discussion, link two pairs together and ask each pair to share their findings. The trainer then needs to demonstrate the parameters for semi-continuous dyeing machines to learners. Where facilities exist at the training provider's premises, enable learners to practice using the appropriate tools, equipment, dyes and chemicals in a controlled environment.		
LU3: **Identify shade by using shade matching method for semi-continuous dyeing**	Lead a discussion on identification of shade and shade matching for dyeing of fabrics / substrate by semi-continuous method. Ensure that the discussion addresses the following points: • the importance of using the correct tools and equipment for shade matching. • Importance of pantone book. • the principles of shade matching for woven fabric. • the importance of using a spectrophotometer for shade identification and matching with standards. • working independently • compliance with relevant regulations and standards Arrange learners in different pairs. Ask each pair to devise 5 questions with correct answers about identification of shade and shade matching. Hold a quiz for the group using the questions devised by each pair. Learners must be able to practice and develop their knowledge and skills relating to shade and shade matching methods in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their	Dyeing Workshop. Classroom	Learner Guide Pantone Book Handouts Presentations Videos

Module : 0723001103 Carry out Semi-Continuous Dyeing			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
	understanding.		
LU4: **Perform Dyeing**	Invite an experienced semi-continuous dyeing supervisor from industry to deliver a presentation to trainees about using proper semi-continuous dyeing machine independently to dye fabrics. Ask the invited supervisor to address the following key points: • selecting the proper semi-continuous machine for fabric dyeing according to dyeing plan. • Importance of safety precautions according to job requirement. • Identification of fabric for semi-continuous dyeing process. • sequencing the appropriate multi-stage process for semi-continuous dyeing correctly • the importance of using the correct tools and equipment. • weighing and measuring dyes, chemicals and auxiliaries accurately • quality requirements following dyeing the fabric by semi-continuous method. • working independently • compliance with relevant regulations and standards After the presentation, invite trainees to pose questions to the invited supervisor that will clarify their understanding. The teacher / invited supervisor then need to demonstrate dyeing process to learners. Where facilities exist at the training provider's premises, enable learners to practice using the appropriate tools and equipment for dyeing process in a controlled environment.	Classroom Dyeing Workshop Visit dyeing industries	Learner's guide Videos Presentations Handouts

Module : 0723001103 Carry out Semi-Continuous Dyeing			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
LU5: **Verify quality for semi-continuous dyeing process**	Lead a brainstorm on ways to ensure and verify the quality of dyeing process at each step. List the brainstorm ideas on a flipchart. If necessary, prompt learners to consider the following: • Operational knowledge and understanding of semi-continuous dyeing machines like winch, soft flow. • Verifying the point of quality parameters like pH, temperature, TDS, pick-up etc before and during the dyeing process. • Corrective action required for maintaining the quality of dyeing process. • Monitoring the shade and shade variation during dyeing process. • Problems that may arise in the specific steps of the dyeing process. • Physically inspection of dyeing process independently. After the brainstorm, review the range of ideas and clarify any issues arising. Provide trainees with a handout of the main points arising from the brainstorm. Learners must be able to practice and develop their knowledge and skills relating to verify quality of fabric dyeing by semi-continuous process in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.	Dyeing QC Lab Visit dyeing industries Classroom	Learner's guide Videos Presentations Handouts
LU6: **Prepare production report for semi-continuous dyeing**	Trainees need to practice their skills in independently for preparing the production report for fabric dyeing by semi-continuous process after job completed in a realistic environment. After the practical sessions are complete, lead a feedback session. Ask learners to complete a self-assessment form on	Classroom Dyeing workshop	Learner's guide Learner self-assessment forms

Module : 0723001103 Carry out Semi-Continuous Dyeing			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
process	their ability to prepare production report, record all dyeing and machine process parameter's time and faults occurred during production. After the discussion, begin the feedback session. Ask one group to share the main points they have recorded for the first key topic for preparing production report for fabric dyeing by semi-continuous process. Discuss these main points briefly with the whole group. Learners should make additional notes to record additional points their group had not identified. Then ask the next group to share the main points they have recorded for the second key topic. Repeat the discussion process. Continue until you have covered all the key topics. End the group discussion activity with a summary.		

Module : 0723001104 Carry out Continuous Dyeing			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
LU1: Follow Dyeing Plan for continuous dyeing	Begin this session with an illustrative presentation about the dyeing plan for performing dyeing of woven fabrics / substrate by continuous dyeing method. Include examples of: • Type of dyeing machine use for dyeing the fabrics. • Difference between continuous dyeing machines for	Class Room Dyeing Workshop.	Learner guide Handouts Presentation Videos

Module : 0723001104 Carry out Continuous Dyeing			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
	fabrics dyeing. • Nature of different dyes, chemicals and auxiliaries used for continuous dyeing of fabrics. • Identification of RFD (ready for dyeing) fabric to be processed. • Identification of shade and methods of shade matching. • Availability of materials required for dyeing operations. • working independently • compliance with relevant regulations and standards Arrange learners into small groups. Ask each group to discuss the importance of being able to independently follow the dyeing plan for fabric dyeing by continuous method and present **THREE** situations that illustrate their discussion. Learners must be able to practice and develop their knowledge and skills relating to follow-up dyeing plan for fabrics dyeing by continuous dyeing method in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding. Take verbal feedback from each group.		Illustrations from catalogues or the internet
LU2: **Prepare and ensure dyeing parameters for continuous dyeing**	Deliver an illustrative presentation on the setting of dyeing parameters for continuous method independently to dye the fabric. Ensure that the presentation addresses the following points: • Identification of fabric construction and quality. • Calculation of dyes, chemicals and auxiliaries for dyeing operations. • sequencing the operations performed correctly • ensuring the correct dyes, chemicals and auxiliaries usage. • Setting the dyeing and machine parameters like dye	Class Room Workshop. Visit dyeing industries	Learner guide Videos for related knowledge on multimedia Handouts

Module : 0723001104 Carry out Continuous Dyeing			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
	weight, chemical pH, liquor ratio, temperature, weight and length of fabric etc. • Handling techniques for tools and equipments. • verifying the condition of machines for continuous dyeing. • Ensure that all parts of machine are in working condition for dyeing. • Methods of loading and un-loading of fabric to the continuous dyeing machine. • setting of machine speed according to the nature of dyeing and fabric quality. • Types of possible dyeing defects during operations and their possible remedies. • Quality requirements following dyeing the fabric. • working independently • compliance with relevant regulations and standards After the presentation, invite trainees to pose questions to the invited operator that will clarify their understanding. Ask the learner group to work in pairs to discuss the key points of using equipment and multi-stage methods independently to dye the fabrics. Following the pairs discussion, link two pairs together and ask each pair to share their findings. The trainer then needs to demonstrate the parameters for continuous dyeing machines to learners. Where facilities exist at the training provider's premises, enable learners to practice using the appropriate tools, equipment, dyes and chemicals in a controlled environment.		
LU3: **Identify shade by using shade matching**	Lead a discussion on identification of shade and shade matching for dyeing of fabrics by continuous method. Ensure that the discussion addresses the following points:	Dyeing Workshop. Classroom	Learner Guide Pantone Book

Module : 0723001104 Carry out Continuous Dyeing			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
method for continuous dyeing	• the importance of using the correct tools and equipment for shade matching. • Importance of pantone book. • the principles of shade matching for fabric. • the importance of using a spectrophotometer for shade identification and matching with standards. • working independently • compliance with relevant regulations and standards Arrange learners in different pairs. Ask each pair to devise 5 questions with correct answers about identification of shade and shade matching. Hold a quiz for the group using the questions devised by each pair. Learners must be able to practice and develop their knowledge and skills relating to shade and shade matching methods in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		Handouts Presentations Videos
LU4: **Perform Dyeing**	Invite an experienced continuous dyeing supervisor from industry to deliver a presentation to trainees about using proper continuous dyeing machine independently to dye fabrics. Ask the invited supervisor to address the following key points: • selecting the proper continuous machine for fabric dyeing according to dyeing plan. • Importance of safety precautions according to job requirement. • Identification of fabric for continuous dyeing process. • sequencing the appropriate multi-stage process for continuous dyeing correctly • the importance of using the correct tools and equipment. • weighing and measuring dyes, chemicals and auxiliaries accurately • quality requirements following dyeing the fabric by	Classroom Dyeing Workshop Visit dyeing industries	Learner's guide Videos Presentations Handouts

Module : 0723001104 Carry out Continuous Dyeing			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
	continuous method. • working independently • compliance with relevant regulations and standards After the presentation, invite trainees to pose questions to the invited supervisor that will clarify their understanding. The teacher / invited supervisor then need to demonstrate dyeing process to learners. Where facilities exist at the training provider's premises, enable learners to practice using the appropriate tools and equipment for dyeing process in a controlled environment.		
LU5: **Verify quality for continuous dyeing process**	Lead a brainstorm on ways to ensure and verify the quality of dyeing process at each step. List the brainstorm ideas on a flipchart. If necessary, prompt learners to consider the following: • Operational knowledge and understanding of continuous dyeing machines. • Verifying the point of quality parameters like pH, temperature, TDS, liquor ratio etc before and during the dyeing process. • Corrective action required for maintaining the quality of dyeing process. • Monitoring the shade and shade variation during dyeing process. • Problems that may arise in the specific steps of the dyeing process. • Physically inspection of dyeing process independently. After the brainstorm, review the range of ideas and clarify any issues arising. Provide trainees with a handout of the main points arising from the brainstorm. Learners must be able to practice and develop their knowledge	Dyeing QC Lab Visit dyeing industries Classroom	Learner's guide Videos Presentations Handouts

Module : 0723001104 Carry out Continuous Dyeing			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
	and skills relating to verify quality of fabric dyeing by exhaust process in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU6: **Prepare production report for continuous dyeing process**	Trainees need to practice their skills in independently for preparing the production report for fabric dyeing by continuous process after job completed in a realistic environment. After the practical sessions are complete, lead a feedback session. Ask learners to complete a self-assessment form on their ability to prepare production report, record all dyeing and machine process parameter's time and faults occurred during production. After the discussion, begin the feedback session. Ask one group to share the main points they have recorded for the first key topic for preparing production report for fabric dyeing by continuous process. Discuss these main points briefly with the whole group. Learners should make additional notes to record additional points their group had not identified. Then ask the next group to share the main points they have recorded for the second key topic. Repeat the discussion process. Continue until you have covered all the key topics. End the group discussion activity with a summary.	Classroom Dyeing workshop	Learner's guide Learner self-assessment forms

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Module : 0723001105 Carry out laboratory testing of dyeing process			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
LU1: Select textile substrate sample	Begin this session with an illustrative presentation about the selecting textile substrate as sample for performing different quality tests before dyeing process at Quality control lab. Include examples of: • The benefits of selecting textile substrate sample (fabric / garment / cone / rope for testing. • Advantages and importance of testing the textile substrate during dyeing process.. • Ensure that all tests performed according to international standards as per customer's requirement. • Handling techniques for tools and equipments. • Checking the condition of testing equipments. • working independently • compliance with relevant regulations and standards Arrange learners into small groups. Ask each group to discuss the importance of being able to independently selection of textile substrate for testing and present **THREE** situations that illustrate their discussion. Learners must be able to practice and develop their knowledge and skills relating to selection of textile substrate for testing before and during dyeing process.. Ensure that learners have the opportunity to ask questions to support their understanding. Take verbal feedback from each group.	Class Room QC Lab. Visit dyeing industry	Learner guide Handouts Presentation Videos
LU2: **Perform Physical lab**	Lead a discussion on physical lab testing for textile substrate for maintaining quality of dyeing process. Ensure that the discussion addresses the following points:	Class Room	Learner guide Handouts

Module : 0723001105 Carry out laboratory testing of dyeing process			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
testing	• identification of yarn, types of yarn and calculating methods for yarn count. • Types of fabric construction and finding picks per inch. • Differentiate between woven and knitted fabric and their principles of dyeing. • Testing of sample by using quality standards as per requirement of buyer. • Principles of testing methods according to the AATTC / ISO / ASTM standards. • Importance of color fastness tests and its effect on production quality. • the importance of using a spectrophotometer for shade identification and matching with standards. • Calculating the GSM and its effect on fabric weight and liquor ratio. • working independently • compliance with relevant regulations and standards Arrange learners in different pairs. Ask each pair to devise 5 questions with correct answers about testing of textile substrate. Hold a quiz for the group using the questions devised by each pair. Learners must be able to practice and develop their knowledge and skills relating to all testing procedures required for the dyeing process in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.	QC Lab. Visit lab of dyeing industry	Presentation Videos
LU3: **Perform Chemical Testing**	Lead a discussion on chemical lab testing for textile substrate for maintaining quality of dyeing process. Ensure that the discussion addresses the following points: • importance and testing of water hardness test (TDS) for dyeing process.	Class Room QC Lab.	Learner guide Handouts Presentation

Module : 0723001105 Carry out laboratory testing of dyeing process			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
	• Identification of starch presence in fabric and its effects on dyeing quality by using TEGWA test. • Identification of dyes use for dyeing process and dyestuff testing. • Importance of strength tests of chemical used for dyeing process. • Chemical properties of chemicals using for dyeing process and its effect on dyeing process. • Principles of chemical testing methods according to the AATTC / ISO / ASTM standards. • Using tools and lab equipments for testing the required test. • working independently • compliance with relevant regulations and standards Arrange learners in different pairs. Ask each pair to devise 5 questions with correct answers about chemical testing of textile substrate. Hold a quiz for the group using the questions devised by each pair. Learners must be able to practice and develop their knowledge and skills relating to all related chemical testing procedures required for the dyeing process in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.	Visit Lab of dyeing lab at industry	Videos
LU4: **Verify final results**	Lead a brainstorm on ways to ensure and verify the quality of testing procedures and results at each test. List the brainstorm ideas on a flipchart. If necessary, prompt learners to consider the following: • Operational knowledge and understanding of lab equipments used for testing. • Verifying the quality parameters like pH, temperature,	QC Lab Classroom	Learner guide Handouts Presentation Videos

Module : 0723001105 Carry out laboratory testing of dyeing process			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
	TDS, liquor ratio etc before and during the dyeing process. • Corrective action required for maintaining the quality of testing the textile substrate.. • Monitoring the testing procedures according to the international standards by AATTC / ISO / ASTM methods. • Problems that may arise during the testing of textile substrate before and during dyeing process. • Physically inspection of tests performed in the quality control lab. After the brainstorm, review the range of ideas and clarify any issues arising. Provide trainees with a handout of the main points arising from the brainstorm. Learners must be able to practice and develop their knowledge and skills relating to verify physical and chemical testing of textile substrate in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU5: **Maintain Quality Records**	Trainees need to practice their skills in independently for performing the quality tests and maintain the lab report for textile substrates by physical and chemical testing after job completed in a realistic environment. After the practical sessions are complete, lead a feedback session. Ask learners to complete a self-assessment form on their ability to prepare and maintain quality report, record all test results and faults occurred during testing. After the discussion, begin the feedback session. Ask one group to share the main points they have recorded for the first key topic for preparing quality lab report for. Discuss these main points briefly with the whole group. Learners should make additional	QC Lab Visit Lab of dyeing industry	Learner guide Handouts Presentation Videos

Module : 0723001105 Carry out laboratory testing of dyeing process			
Learning Unit	**Suggested Teaching / Learning Activities**	**Delivery Context**	**Media**
	notes to record additional points their group had not identified. Then ask the next group to share the main points they have recorded for the second key topic. Repeat the discussion process. Continue until you have covered all the key topics. End the group discussion activity with a summary.		

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