



# Leather Processing Level II Curriculum

Based on December 2021, Version 4 Occupational  
Standards (OS)

December 2021  
Addis Ababa, Ethiopia

## Preface

The reformed TVET-System is an outcome-based system. It utilizes the needs of the labor market and occupational requirements from the world of work as the benchmark and standard for TVET delivery. The requirements from the world of work are analyzed and documented – taking into account international benchmarking – as occupational standards (OS).

In the reformed TVET-System, curricula and curriculum development play an important role with regard to quality driven comparable TVET-Delivery. The Curricula help to facilitate the training process in a way, that trainees acquire the set of occupational competences (skills, knowledge and attitude) required at the working place and defined in the occupational standards (OS).

This curriculum has been developed by a group of professional experts from different Regional TVET Bureaus, colleges, Industries, Institutes and universities based on the occupational standard for Leather Processing Level II.

The curriculum development process has been actively supported and facilitated by **Ministry of Labor and Skills**.

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## TVET-Program Design

### 1.1. TVET-Program Title: Leather Processing Equipment Operation Level II

### 1.2. TVET-Program Description

The Program is designed to develop the necessary attitude, knowledge and skills of the learners to the standard required by the occupation. The contents of this program are in line with the occupational standard. Learners who successfully completed the Program will be qualified to work as a **Equipment Operator** with competencies elaborated in the respective OS. Graduates of the program will have the required qualification to work in the **Industry Sector** in the field of **Leather Processing**.

The prime objective of this training program is to equip the trainees with the identified competences specified in the OS. Graduates are therefore expected Perform assortment and grading, Prepare Chemicals for Leather processing, Perform Beamhouse and Tanning Operations, Perform post-tanning and Crust Operations, Perform Finishing Operation, Operate Tannery Effluent Treatment Plant and Prevent and Eliminate MUDA in accordance with the performance criteria described in the OS.

### 1.3. TVET-Program Learning Outcomes

The expected outputs of this program are the acquisition and implementation of the following units of competence: –

- IND LEP2 07 1121 Prevent and Eliminate MUDA
- IND LEP2 01 1121 Perform Assortment and Grading
- IND LEP2 02 1121 Prepare Chemicals for Leather Processing
- IND LEP2 03 1121 Perform Beamhouse and Tanning operations
- IND LEP2 04 1121 Perform post-tanning and Crust Operations
- IND LEP2 05 1121 Perform Finishing Operation
- IND LEP2 06 1121 Operate Tannery Effluent Treatment Plant

#### 1.4. Duration of the TVET-Program

The Program will have duration of **485 Hours** including the on-the-job practice or cooperative training time.

No	Unit competency	On school training		Cooperative Training	Total Hours	Remarks
		Theory	Practical			
1.	Prevent and Eliminate MUDA	9	15		24	
2.	Perform Assortment and Grading	12	18	6	36	
3.	Prepare Chemicals for Leather Processing	12	18		30	
4.	Perform Beamhouse and Tanning operations	21	70	9	100	
5.	Perform post-tanning and Crust Operations	27	80	12	119	
6.	Perform Finishing Operation	24	60	12	96	
7.	Operate Tannery Effluent Treatment Process	21	50	9	80	
<b>Total calculated</b>					<b>485</b>	
<b>Total to be provided</b>						

#### 1.5. Qualification Level and Certification

Based on the descriptors elaborated on the Ethiopian National TVET Qualification Framework (NTQF) the qualification of this specific TVET Program is “**Level II**”.

The trainee can exit after successfully completing the modules in one level and will be awarded the equivalent institutional certificate on the level completed. However, only institutional certificate of training accomplishment will be awarded.

## 1.6. Target Groups

Any citizen **without disability** who meets the entry requirements under items 1.7 and capable of participating in the learning activities is entitled to take part in the Program.

## 1.7 Entry Requirements

The prospective participants of this program are required to possess the requirements or directive of the Federal TVET Agency.

## 1.8 Mode of Delivery

This TVET-Program is characterized as a formal Program on middle level technical skills. The mode of delivery is co-operative training. The time spent by the trainees in the real work place/ industry will give them enough exposure to the actual world of work and enable them to get hands-on experience.

The co-operative approach will be supported with school-based lecture-discussion, simulation and actual practice. These modalities will be utilized before the trainees are exposed to the industry environment.

Hence based on the nature of the occupation, location of the TVET institutions, and interest of the industry alternative mode of cooperative training such as apprenticeships, internship and traineeship will be employed. In addition, in the areas where industry is not sufficiently available the established production and service centers/learning factories in TVET institutions will be used as cooperative training places. The Training-Institution and identified companies have forged an agreement to co-operate with regard to the implementation of this program.

## 1.9 TVET-Program Structure

Unit of Competence		Module Code & Title		Learning Outcomes	Duration (In Hours)
IND LEP2 07 1121	Prevent and Eliminate MUDA	IND LEO2 M01 1221	Preventing and Eliminating MUDA	<ul style="list-style-type: none"> <li>• Prepare for work.</li> <li>• Identify MUDA and Problem</li> <li>• Analyze causes of a problem</li> <li>• Eliminate MUDA and assess effectiveness of the solution</li> <li>• Prevent occurrence of wastes and sustain operation</li> </ul>	24
IND LEP2 01 1121	Perform assortment and grading	IND LEP2 M02 1221	Performing assortment and grading	<ul style="list-style-type: none"> <li>• Determine requirements</li> <li>• Assort raw hides and skins</li> <li>• Assort pickle and wet blue leather</li> <li>• Grade raw hides and skins</li> <li>• Grade pickle and wet blue</li> </ul>	36
IND LEP2 02 1121	Prepare Chemicals for leather processing	IND LEP2 M03 1221	Preparing Chemicals for leather processing	<ul style="list-style-type: none"> <li>• Confirm pre-preparation tasks</li> <li>• Prepare chemicals and equipment</li> <li>• Store unused chemicals</li> <li>• Clean and store equipment and dispose wastes</li> </ul>	30

Unit of Competence		Module Code & Title		Learning Outcomes	Duration (In Hours)
IND LEP2 03 1121	Perform Beamhouse and Tanning operations	IND LEP2 M04 1221	Performing Beamhouse and Tanning operations	<ul style="list-style-type: none"> <li>• Confirm instructions and operational requirement</li> <li>• Undertake process Operations</li> <li>• Undertake mechanical Operations</li> </ul>	100
IND LEP2 04 1121	Perform post- tanning and Crust Operations	IND LEP2 M05 1221	Performing post- tanning and Crust Operations	<ul style="list-style-type: none"> <li>• Confirm instructions and operational requirement</li> <li>• Operate drum to process tanned leather</li> <li>• Operate machineries to produce Crust leather</li> </ul>	119
IND LEP2 05 1121	Perform Finishing Operation	IND LEP2 M06 1221	Performing Finishing Operation	<ul style="list-style-type: none"> <li>• Prepare for finishing operations</li> <li>• Operate machines to produce finished leathers</li> <li>• Apply formulated chemicals</li> <li>• Monitor product quality</li> </ul>	96
IND LEP 06 1121	Operate Tannery Effluent Treatment Plant	IND LEP2 M07 1221	Operating Tannery Effluent Treatment Plant	<ul style="list-style-type: none"> <li>• Perform pre-operations tasks</li> <li>• Perform primary treatment</li> <li>• Perform secondary treatment</li> </ul>	80

Unit of Competence	Module Code & Title	Learning Outcomes	Duration (In Hours)
		<ul style="list-style-type: none"> <li>• Perform tertiary treatment</li> <li>• Perform sludge dewatering</li> <li>• Maintain documents and records</li> </ul>	



### 1.10 Institutional Assessment

Two types of evaluation will be used in determining the extent to which learning outcomes are achieved. The specific learning outcomes are stated in the modules. In assessing them, verifiable and observable indicators and standards shall be used.

The **formative assessment** is incorporated in the learning modules and form part of the learning process. Formative evaluation provides the trainee with feedback regarding success or failure in attaining learning outcomes. It identifies the specific learning errors that need to be corrected, and provides reinforcement for successful performance as well. For the teacher, formative evaluation provides information for making instruction and remedial work more effective.

**Summative Evaluation** the other form of evaluation is given when all the modules in the program have been accomplished. It determines the extent to which competence have been achieved. And, the result of this assessment decision shall be expressed in the term ‘competent or not yet competent’.

Techniques or tools for obtaining information about trainees’ achievement include oral or written test, demonstration and on-site observation.

### 1.11 TVET Teachers Profile

The teachers conducting this particular TVET Program are **B Level** and have satisfactory practical experiences or equivalent qualifications.

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<b>LEARNING MODULE 06</b>	Logo of TVET Provider
<b>TVET-PROGRAMME TITLE: Leather processing Level II</b>	
<b>MODULE TITLE: Preventing and Eliminating MUDA</b>	
<b>MODULE CODE : IND LEP2 M01 1221</b>	
<b>NOMINAL DURATION : 24 Hours</b>	
<p><b>MODULE DESCRIPTION:</b> This module covers the knowledge, skills and attitudes required by worker to Prevent and Eliminate MUDA to his/her workplace by applying scientific problem-solving techniques and tools to enhance quality, productivity and other kaizen elements on continual basis. It covers responsibility for the day- to-day operations of the workplace and ensuring that continuous improvements of Kaizen elements are initiated and institutionalized.</p>	
<p><b>LEARNING OUTCOMES</b></p> <p>At the end of the module the learner will be able to:</p> <ul style="list-style-type: none"> <li>LO1. Prepare for work.</li> <li>LO2. Identify MUDA and problem.</li> <li>LO3. Analyze causes of a problem.</li> <li>LO4. Eliminate MUDA and Assess effectiveness of the solution.</li> <li>LO5. Prevent occurrence of wastes and sustain operation</li> </ul>	
<p><b>MODULE CONTENTS:</b></p> <p><b>LO1 Prepare for work.</b></p> <ul style="list-style-type: none"> <li>1.1. Determining &amp; interpreting job specifications</li> <li>1.2. Identifying OHS requirements</li> <li>1.3. Material and equipment identification</li> </ul> <p><b>LO2. Identify MUDA and problem.</b></p> <ul style="list-style-type: none"> <li>2.1 Planning MUDA and problem identification</li> <li>2.2 Tools and techniques to analyze existing workplace situation</li> <li>2.3 Types of MUDA</li> <li>2.4 Procedures of measuring &amp; reporting MUDA</li> </ul>	

**LO3. Analyze causes of a problem.**

- 3.1 Problems versus possible causes
- 3.2 4M1E method of cause relationship analysis
- 3.3 Prioritizing critical root causes of the problem
- 3.4 Possible solutions and impact assessment

**LO4. Eliminate MUDA and Assess effectiveness of the solution.**

- 4.1 Preparing and implementing Plan of MUDA elimination
  - 4.1.1 Implementing action plan by medium KPT members
  - 4.1.2 Tools and techniques of MUDA elimination
  - 4.1.3 Results of MUDA elimination
- 4.2 Ten basic principles for improvement
- 4.3 Reporting MUDA elimination improvements

**LO5. Prevent occurrence of wastes and sustain operation**

- 5.1 Preparing and implementing Plan of MUDA prevention.
- 5.2 Standard Operating Procedures for machines and operations
- 5.3 Prevention methods for occurrences of wastes/MUDA
- 5.4 Application of **5W and 1H** sheet
- 5.5 Sustaining updated standard procedures and work practices

**LEARNING METHODS:**

For None Impaired Trainees	Reasonable Adjustment for Trainees with Disability (TWD)		
	Deaf	Hard of hearing	Physical impairment
<b>Lecture-discussion</b>	<ul style="list-style-type: none"> <li>❖ Assign sign language interpreter</li> <li>❖ Arrange the class room seating to be conducive for eye to eye contact</li> <li>❖ Make sure the luminosity of the light of class room is kept</li> <li>❖ Introduce new and relevant vocabularies</li> <li>❖ Use short and clear sentences</li> <li>❖ Give emphasis on visual lecture and ensure the attention of the trainees</li> <li>❖ Avoid movement during lecture time</li> <li>❖ Present the lecture in video format</li> <li>❖ Summarize main points</li> </ul>	<ul style="list-style-type: none"> <li>❖ Organize the class room seating arrangement to be accessible to trainees</li> <li>❖ Speak loudly</li> <li>❖ Ensure the attention of the trainees</li> <li>❖ Present the lecture in video format</li> <li>❖ Ensure the attention of the trainees</li> </ul>	<ul style="list-style-type: none"> <li>❖ Organize the class room seating arrangement to be accessible for wheelchairs users.</li> <li>❖ Facilitate and support the trainees who have severe impairments on their upper limbs to take note</li> <li>❖ Provide Orientation on the physical feature of the work shop</li> </ul>

<p><b>Demonstration</b></p>	<ul style="list-style-type: none"> <li>❖ use Sign language interpreter</li> <li>❖ Use video recorded material</li> <li>❖ Ensure attention of the trainees</li> <li>❖ Provide structured training</li> <li>❖ Show clear and short method</li> <li>❖ Use gesture</li> <li>❖ Provide tutorial support (if necessary)</li> </ul>	<ul style="list-style-type: none"> <li>❖ Illustrate in clear &amp; short method</li> <li>❖ Use Video recorded material</li> <li>❖ Ensure the attention of the trainees</li> <li>❖ Provide tutorial support</li> <li>❖ (if necessary)</li> </ul>	<ul style="list-style-type: none"> <li>❖ Facilitate and support the trainees having severe upper limbs impairment to operate equipments/ machines</li> <li>❖ Assign peer trainees to assist</li> <li>❖ Conduct close follow up</li> <li>❖ Provide tutorial support</li> <li>❖ (if necessary)</li> </ul>
<p><b>Group discussion</b></p>	<ul style="list-style-type: none"> <li>❖ Use sign language interpreters</li> <li>❖ Facilitate the integration of trainees with group members</li> <li>❖ Conduct close follow up</li> <li>❖ Introduce the trainees with other group member</li> </ul>	<ul style="list-style-type: none"> <li>❖ Facilitate the integration of trainees with group members</li> <li>❖ Conduct close follow up</li> <li>❖ Introduce the trainees with other group member</li> <li>❖ Inform the group members to speak loudly</li> </ul>	<ul style="list-style-type: none"> <li>❖ Introduce the trainees with their peers</li> </ul>
<p><b>Exercise</b></p>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up and guidance</li> <li>❖ Provide tutorial support if necessary</li> <li>❖ provide special attention in the process/practical training</li> <li>❖ Introduce new and relevant vocabularies</li> </ul>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up and guidance</li> <li>❖ Provide tutorial support if necessary</li> <li>❖ provide special attention in the process/ practical training</li> </ul>	<ul style="list-style-type: none"> <li>❖ Assign peer trainees</li> <li>❖ Use additional nominal hours if necessary</li> </ul>

<p><b>Individual assignment</b></p>	<ul style="list-style-type: none"> <li>❖ Use sign language interpreter</li> <li>❖ Provide briefing /orientation on the assignment</li> <li>❖ Provide visual recorded material</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide briefing /orientation on the assignment</li> <li>❖ Provide visual recorded material</li> </ul>	
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<b>ASSESSMENT METHODS:</b>			
<b>Interview</b>	<p>Use sign language interpreter</p> <ul style="list-style-type: none"> <li>❖ Ensure or confirm whether the proper communication was conducted with the trainee through the service of the sign language interpreter</li> <li>❖ Use short and clear questioning</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Speak loudly</li> <li>❖ Using sign language interpreter if necessary</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use written response as an option for the trainees having speech challenges</li> </ul>
<b>Written test</b>	<ul style="list-style-type: none"> <li>❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers</li> <li>❖ Avoid essay writing</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers if necessary.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use oral response as an option to give answer for trainees having severe upper limb impairment</li> <li>❖ Time extension for trainees having severe upper limb impairment</li> </ul>
<b>Demonstration /Observation</b>	<ul style="list-style-type: none"> <li>❖ Use sign language interpreter</li> <li>❖ Brief on the instruction of the exam</li> <li>❖ Provide activity-based/ practical assessment method</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide activity based assessment</li> <li>❖ Brief on the instruction of the exam</li> <li>❖ Use loud voice</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide activity based assessment</li> <li>❖ Conduct close follow up</li> <li>❖ Time extension</li> </ul>

**ASSESSMENT CRITERIA:**

**LO 1 Prepare for work.**

- Work instructions are used to determine job requirements, including method, material and equipment.
- Job specifications are read and interpreted following working manual.
- OHS requirements, including dust and fume collection, breathing apparatus and eye and ear personal protection needs are observed throughout the work.
- Appropriate material is selected for work.
- Safety equipment and tools are identified and checked for safe and effective operation.

**LO2 Identify MUDA and problem**

- Plan of MUDA and problem identification is prepared and implemented.
- Causes and effects of MUDA are discussed.
- All possible problems related to the process /Kaizen elements are listed using statistical tools and techniques.
- All possible problems related to kaizen elements are identified and listed on Visual Management Board/Kaizen Board.
- Tools and techniques are used to draw and analyze current situation of the work place.
- Wastes/MUDA are identified and measured based on relevant procedures.
- Identified and measured wastes are reported to relevant personnel.

**LO3 Analyze causes of a problem.**

- All possible causes of a problem are listed.
- Cause relationships are analyzed using 4M1E.
- Causes of the problems are identified.
- The root cause which is most directly related to the problem is selected.
- All possible ways are listed using creative idea generation to eliminate the most critical root cause.
- The suggested solutions are carefully tested and evaluated for potential complications.
- Detailed summaries of the action plan are prepared to implement the suggested solution



**LO4 Eliminate MUDA and Assess effectiveness of the solution.**

- Plan of MUDA elimination is prepared and implemented by medium KPT members.
- Necessary attitude and the ten basic principles for improvement are adopted to eliminate waste/MUDA.
- Tools and techniques are used to eliminate wastes/MUDA based on the procedures and OHS.
- Wastes/MUDA are reduced and eliminated in accordance with OHS and organizational requirements.
- Tangible and intangible results are identified.
- Tangible results are compared with targets using various types of diagrams.
- Improvements gained by elimination of waste/MUDA are reported to relevant bodies.

**LO5 Prevent occurrence of wastes and sustain operation**

- Plan of MUDA prevention is prepared and implemented.
- Standards required for machines, operations, defining normal and abnormal conditions, clerical procedures and procurement are discussed and prepared.
- Occurrences of wastes/MUDA are prevented by using visual and auditory control methods.
- Waste-free workplace is created using 5W and 1Hsheet.
- The completion of required operation is done in accordance with standard procedures and practices.
- The updating of standard procedures and practices is facilitated.
- The capability of the work team that aligns with the requirements of the procedure is ensured and trained on the new Standard Operating Procedures (SOPs).

**Annex: Resource Requirements**

<b>IND LEP2 M01 1221: Preventing and Eliminating MUDA</b>				
<b>Item No.</b>	<b>Category/Item</b>	<b>Description/ Specifications</b>	<b>Quantity</b>	<b>Recommended Ratio (Item: Trainee)</b>
<b>A.</b>	<b>Learning Materials</b>			
1	TTLM	Prepared by the trainer	25	1:1
2	Textbook			1:5
3	Reference Books			1:5
3.1.	Statistical process control	Ethiopian Standard Agency-training material	1	1:25
<b>B.</b>	<b>Learning Facilities &amp; Infrastructure</b>			
1	Lecture room	5m*5m	1	1:25
2	Library	10m*10m	1	1:25
<b>C</b>	<b>Consumable Materials</b>			
1.	Copy paper	A4 size	5rim	1:5
2.	Pencil	Standard	25	1:1
<b>D</b>	<b>Tools and Equipment</b>			
1	Laptop computer	Standard	1	1:25
2	White/Black board	Standard	1	1:25
3	Paint	Galloon	5	1:5
4	Hook	Standard		1:5
5	Sticker	Standard	5	1:5
6	Signboard	Standard	1	1:5
7	Nails	Standard	1 Kg	1:25
8	Shelves	Standard	1	1:25
9	Chip wood	Standard	1	1:5
10	Sponge	Standard	25	1:1

11	Broom		25	1:1
12	Shadow board/tools board		1	1:25

<b>LEARNING MODULE 02</b>	
<b>TVET-PROGRAMME TITLE: Leather Processing Level II</b>	
<b>MODULE TITLE: Performing Assortment and Grading</b>	
<b>MODULE CODE: IND LEP2 M02 1221</b>	
NOMINAL DURATION :36 Hours	
<b>MODULE DESCRIPTION:</b> This module covers the knowledge, attitude and skills required to grade, sort or class raw hides/skins, pickle and wet blue leather to ensure the quality of raw material, process and to identify the suitability of the material for a particular end product.	
<b>LEARNING OUTCOMES</b> At the end of the module the learner will be able to: LO.1 Determine requirements LO.2 Assort raw hides/ skins LO.3 Assort pickle and wet blue LO.4 Grading raw hides/skins LO.5 Grading pickle and wet blue	
<b>MODULE CONTENTS:</b> <b>LO.1 Determine requirements</b> 1.1 Identifying assorting and grading standard 1.2 Tools/Equipments for assortment and grading <b>LO.2 Assort hides/ skins</b> 2.1 Preservation methods and requirements 2.2 Assorting Hide/skin by type and size <b>LO.3 Assort pickle and wet blue</b> 3.1 Requirements of pickle and wet blue 3.2 Assorting pickle and wet blue by size and type <b>LO.4 Grade raw hide/skin</b> 4.1 Hide/Skin defects 4.2 Grading and labeling hide/skin 4.3 Records and documentation	

### **LO.5 Grade pickle and wet blue**

- 5.1. Pickle and wet blue defects
- 5.2. Grading and labeling pickle and wet blue
- 5.3. Records and documentation

<b>LEARNING METHODS:</b>				
<b>For None Impaired Trainees</b>	<b>Reasonable Adjustment for Trainees with Disability (TWD)</b>			
	<b>Low Vision and Blind</b>	<b>Deaf</b>	<b>Hard of hearing</b>	<b>Physical impairment</b>
<b>Lecture-discussion</b>	<ul style="list-style-type: none"> <li>❖ Provide large print text</li> <li>❖ Prepare the lecture in <b>Audio/video &amp; in Brail format</b></li> <li>❖ Organize the class room seating arrangement to be accessible to trainees</li> <li>❖ Write short notes on the black/white board using large text</li> <li>❖ Make sure the luminosity of the light of class room is kept</li> <li>❖ Use normal tone of voice</li> <li>❖ Encourage trainees to record the lecture in audio format</li> <li>❖ Provide Orientation on the physical feature of the work shop</li> <li>❖ Summarize main points</li> </ul>	<ul style="list-style-type: none"> <li>❖ Assign sign language interpreter</li> <li>❖ Arrange the class room seating to be conducive for eye to eye contact</li> <li>❖ Make sure the luminosity of the light of class room is kept</li> <li>❖ Introduce new and relevant vocabularies</li> <li>❖ Use short and clear sentences</li> <li>❖ Give emphasis on visual lecture and ensure the attention of the trainees</li> <li>❖ Avoid movement during lecture time</li> <li>❖ Present the lecture in video</li> </ul>	<ul style="list-style-type: none"> <li>❖ Organize the class room seating arrangement to be accessible to trainees</li> <li>❖ Speak loudly</li> <li>❖ Ensure the attention of the trainees</li> <li>❖ Present the lecture in video format</li> <li>❖ Ensure the attention of the trainees</li> </ul>	<ul style="list-style-type: none"> <li>❖ Organize the class room seating arrangement to be accessible for wheelchairs users.</li> <li>❖ Facilitate and support the trainees who have severe impairments on their upper limbs to take note</li> <li>❖ Provide Orientation on the physical feature of the work shop</li> </ul>

		format		
		❖ Summarize main points		
<b>Demonstration</b>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up</li> <li>❖ Use verbal description</li> <li>❖ Provide special attention in the process of guidance</li> <li>❖ facilitate the support of peer trainees</li> <li>❖ Prepare &amp; use simulation</li> </ul>	<ul style="list-style-type: none"> <li>❖ use Sign language interpreter</li> <li>❖ Use video recorded material</li> <li>❖ Ensure attention of the trainees</li> <li>❖ Provide structured training</li> <li>❖ Show clear and short method</li> <li>❖ Use gesture</li> <li>❖ Provide tutorial support</li> <li>❖ (if necessary)</li> </ul>	<ul style="list-style-type: none"> <li>❖ Illustrate in clear &amp; short method</li> <li>❖ Use Video recorded material</li> <li>❖ Ensure the attention of the trainees</li> <li>❖ Provide tutorial support</li> <li>❖ (if necessary)</li> </ul>	<ul style="list-style-type: none"> <li>❖ Facilitate and support the trainees having severe upper limbs impairment to operate equipments/ machines</li> <li>❖ Assign peer trainees to assist</li> <li>❖ Conduct close follow up</li> <li>❖ Provide tutorial support</li> <li>❖ (if necessary)</li> </ul>
<b>Group discussion</b>	<ul style="list-style-type: none"> <li>❖ Facilitate the integration of trainees with group members</li> <li>❖ Conduct close follow up</li> <li>❖ Introduce the trainees with other group member</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use sign language interpreters</li> <li>❖ Facilitate the integration of trainees with group members</li> <li>❖ Conduct close follow up</li> <li>❖ Introduce the trainees with</li> </ul>	<ul style="list-style-type: none"> <li>❖ Facilitate the integration of trainees with group members</li> <li>❖ Conduct close</li> </ul>	<ul style="list-style-type: none"> <li>❖ Introduce the trainees with their peers</li> </ul>

	<ul style="list-style-type: none"> <li>❖ Brief the thematic issues of the work</li> </ul>	other group member	<p>follow up</p> <ul style="list-style-type: none"> <li>❖ Introduce the trainees with other group member</li> <li>❖ Inform the group members to speak loudly</li> </ul>	
<b>Exercise</b>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up and guidance</li> <li>❖ Provide tutorial support if necessary</li> <li>❖ provide special attention in the process</li> </ul>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up and guidance</li> <li>❖ Provide tutorial support if necessary</li> <li>❖ provide special attention in the process/practical training</li> <li>❖ Introduce new and relevant vocabularies</li> </ul>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up and guidance</li> <li>❖ Provide tutorial support if necessary</li> <li>❖ provide special attention in the process/ practical training</li> </ul>	<ul style="list-style-type: none"> <li>❖ Assign peer trainees</li> <li>❖ Use additional nominal hours if necessary</li> </ul>
<b>Individual assignment</b>	<ul style="list-style-type: none"> <li>❖ prepare the assignment questions in large text/Brail</li> <li>❖ Encourage the trainees to prepare</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use sign language interpreter</li> <li>❖ Provide briefing /orientation on the assignment</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide briefing /orientation on the assignment</li> </ul>	



	<p>and submit the assignment in large texts/Brail</p> <ul style="list-style-type: none"> <li>❖ Make available recorded assignment questions</li> <li>❖ Facilitate the trainees to prepare and submit the assignment in soft or hard copy</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide visual recorded material</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide visual recorded material</li> </ul>	
<b>ASSESSMENT METHODS:</b>				
<b>Interview</b>		<ul style="list-style-type: none"> <li>❖ Use sign language interpreter</li> <li>❖ Ensure or conform whether the proper communication was conducted with the trainee through the service of the sign language interpreter</li> <li>❖ Use short and clear questioning</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Speak loudly</li> <li>❖ Using sign language interpreter if necessary</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use written response as an option for the trainees having speech challenges</li> </ul>

<p><b>Written test</b></p>	<ul style="list-style-type: none"> <li>❖ Prepare the exam in large texts/Brail</li> <li>❖ Use interview as an option if necessary</li> <li>❖ Prepare the exam in audio format</li> <li>❖ Assign human reader (if necessary)</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers</li> <li>❖ Avoid essay writing</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers if necessary.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use oral response as an option to give answer for trainees having severe upper limb impairment</li> <li>❖ Time extension for trainees having severe upper limb impairment</li> </ul>
<p><b>Demonstration/Observation</b></p>	<ul style="list-style-type: none"> <li>❖ Brief the instruction or provide them in large text/Brail</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use sign language interpreter</li> <li>❖ Brief on the instruction of the exam</li> <li>❖ Provide activity-based/practical assessment method</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide activity based assessment</li> <li>❖ Brief on the instruction of the exam</li> <li>❖ Use loud voice</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide activity based assessment</li> <li>❖ Conduct close follow up</li> <li>❖ Time extension</li> </ul>

**ASSESSMENT CRITERIA:**

**LO.1 Determine requirements**

- Procedures or standards are identified to meet requirements
- Equipment and tools used to facilitate assortment and grading are identified
- Requirements are checked to confirm correct application of procedures or standards according to OHS practices

**LO.2 Assort raw hides/ skins**

- Hides/ skins are assessed to determine the preservation requirements,
- Hides/ skins are assessed to determine the preservation methods
- Assort hide and skin based on their type and size

**LO.3 Assort pickle and wet blue**

- The requirements of pickle and wet blue are assessed
- Pickle and wet blue leather are assorted based on their types and size

**LO.4 Grade raw hide/skin**

- Hides and skins are visually inspected based on defects
- Hides and skins are graded based on defects and required standard
- Documentation associated with tasks is accurately completed to meet required workplace procedures
- Labels, tags or other identification are added to raw skins and hides

**LO.5 Grade pickle and wet blue**

- Pickle and Wet blue are visually inspected based on defects
- Pickles and wet blue are graded as per the required standard
- Documentation associated with tasks is accurately completed to meet required workplace procedures
- Labels, tags or other identification are added to pickle and wet blue

## Annex: Resource Requirements

IND LEP2 M02 1221: Perform Assortment and Grading				
Item No.	Category/Item	Description/ Specifications	Qty	Recommended Ratio (Item: Learner)
<b>A.</b>	<b>Learning Materials</b>			
1.	TTLM	Prepared by trainer		
2.	Reference material			
2.1.	Grading of raw sheep, goat and pickled sheep skins by defect and size	CES-11 2019 2 <sup>nd</sup> Edition	5	1:5
2.2	Leather - Wet-blue chrome tanned sheep and calfskins, and goatskins Specification	ES 46:2013 1 <sup>st</sup> edition	5	1:5
2.3	Raw hide and calfskin part I: Description of defects	ES ISO-2822-1: 2008	5	1:5
2.4	Raw hide and calfskin part II: Guidelines for grading on the basis of mass	ES ISO-2822-2: 2018	5	1:5
2.5	Raw hide and calfskin part III: Guidelines for grading on the basis defects	ES ISO-2822-3: 2018	5	1:5
2.6	Grading of raw cattle hides calf skins by appearance and mass	CES-29 2019 2 <sup>nd</sup> Edition	5	1:5
2.7	Skin, hide and leather defect	Jean J. Tancous	5	1:5
2.8	Possible defects in leather production: definitions, causes, consequences, remedies and types of leather	Gerhard Jhon	5	1:5
<b>B.</b>	<b>Learning Facilities &amp; Infrastructure</b>			
1.	Lecture Room		1	1:25
2.	Model tannery		1	1:25
3.	Library		1	1:25
<b>C.</b>	<b>Consumable Materials</b>			

1	Stationery:			
2	White board marker /chalk	Different color	12	
3	Paper	A4	1 rim	
4	Duster	-	2 pcs	
5	Sample raw material			
5.1	Raw skin/hide		125	5:1
5.2	Pickled pelt		125	5:1
5.3	Wet blue leather		125	5:1
<b>D.</b>	<b>Tools and Equipment</b>			
1	PPE (glove, apron, boot, coat)			1:1
2	Cutter/knife		5	1:5
3	Selection/Assortment table		1	1:25
4	Size chart		1	1:25
5	Thickness gauge		1	1:25
6	Moisture content tester		1	1:25
7	Laptop computer		1	1:25
8	LCD projector		1	1:25

<b>LEARNING MODULE 03</b>	
<b>TVET-PROGRAMME TITLE: Leather Processing Level II</b>	
<b>MODULE TITLE: Preparing Chemicals for Leather Processing</b>	
<b>MODULE CODE : IND LEP2 M03 1221</b>	
NOMINAL DURATION : 30 Hours	
<b>MODULE DESCRIPTION:</b> This module covers the attitude, knowledge and skills required to perform the range of tasks used in the preparation of chemicals for beam house, post tanning and finishing processes, including making appropriate calculations and weighing.	
<b>LEARNING OUTCOMES</b>	
At the end of the module the learner will be able to:	
LO.1 Confirm pre-preparation tasks	
LO.2 Prepare chemicals and equipment	
LO.3 Store unused chemicals	
LO.4 Clean and Store equipment and dispose wastes	
<b>MODULE CONTENTS:</b>	
<b>LO.1 Confirm pre-preparation tasks</b>	
1.1. Identifying work instruction and process recipe	
1.2. Identifying chemicals and equipment	
<b>LO.2 Prepare chemicals and equipment</b>	
2.1 Organizing equipment and PPE	
2.2 Calculation and preparation of chemicals	
2.3 Safe handling of chemicals and materials	
<b>LO.3 Store unused chemicals</b>	
3.1 Repacking unused chemicals	
3.2 Storage of unused chemicals	
3.3 Recording chemical consumption	
<b>LO.4 Clean and Store equipment and dispose wastes</b>	
4.1 Cleaning equipment and workplace	
4.2 Handling and storing equipment	
4.3 Waste disposal	

<b>LEARNING METHODS:</b>				
<b>For None Impaired Trainees</b>	<b>Reasonable Adjustment for Trainees with Disability (TWD)</b>			
	<b>Low Vision and Blind</b>	<b>Deaf</b>	<b>Hard of hearing</b>	<b>Physical impairment</b>
<b>Lecture-discussion</b>	<ul style="list-style-type: none"> <li>❖ Provide large print text</li> <li>❖ Prepare the lecture in <b>Audio/video &amp; in Brail format</b></li> <li>❖ Organize the class room seating arrangement to be accessible to trainees</li> <li>❖ Write short notes on the black/white board using large text</li> <li>❖ Make sure the luminosity of the light of class room is kept</li> <li>❖ Use normal tone of voice</li> <li>❖ Encourage trainees to record the lecture in audio format</li> <li>❖ Provide Orientation on the physical feature of the work shop</li> <li>❖ Summarize main points</li> </ul>	<ul style="list-style-type: none"> <li>❖ Assign sign language interpreter</li> <li>❖ Arrange the class room seating to be conducive for eye to eye contact</li> <li>❖ Make sure the luminosity of the light of class room is kept</li> <li>❖ Introduce new and relevant vocabularies</li> <li>❖ Use short and clear sentences</li> <li>❖ Give emphasis on visual lecture and ensure the attention of the trainees</li> <li>❖ Avoid movement during lecture time</li> <li>❖ Present the lecture in video</li> </ul>	<ul style="list-style-type: none"> <li>❖ Organize the class room seating arrangement to be accessible to trainees</li> <li>❖ Speak loudly</li> <li>❖ Ensure the attention of the trainees</li> <li>❖ Present the lecture in video format</li> <li>❖ Ensure the attention of the trainees</li> </ul>	<ul style="list-style-type: none"> <li>❖ Organize the class room seating arrangement to be accessible for wheelchairs users.</li> <li>❖ Facilitate and support the trainees who have severe impairments on their upper limbs to take note</li> <li>❖ Provide Orientation on the physical feature of the work shop</li> </ul>

		format ❖ Summarize main points		
<b>Demonstration</b>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up</li> <li>❖ Use verbal description</li> <li>❖ Provide special attention in the process of guidance</li> <li>❖ facilitate the support of peer trainees</li> <li>❖ Prepare &amp; use simulation</li> </ul>	<ul style="list-style-type: none"> <li>❖ use Sign language interpreter</li> <li>❖ Use video recorded material</li> <li>❖ Ensure attention of the trainees</li> <li>❖ Provide structured training</li> <li>❖ Show clear and short method</li> <li>❖ Use gesture</li> <li>❖ Provide tutorial support</li> <li>❖ (if necessary)</li> </ul>	<ul style="list-style-type: none"> <li>❖ Illustrate in clear &amp; short method</li> <li>❖ Use Video recorded material</li> <li>❖ Ensure the attention of the trainees</li> <li>❖ Provide tutorial support</li> <li>❖ (if necessary)</li> </ul>	<ul style="list-style-type: none"> <li>❖ Facilitate and support the trainees having severe upper limbs impairment to operate equipments/ machines</li> <li>❖ Assign peer trainees to assist</li> <li>❖ Conduct close follow up</li> <li>❖ Provide tutorial support</li> <li>❖ (if necessary)</li> </ul>
<b>Group discussion</b>	<ul style="list-style-type: none"> <li>❖ Facilitate the integration of trainees with group members</li> <li>❖ Conduct close follow up</li> <li>❖ Introduce the trainees with other group member</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use sign language interpreters</li> <li>❖ Facilitate the integration of trainees with group members</li> <li>❖ Conduct close follow up</li> <li>❖ Introduce the trainees with</li> </ul>	<ul style="list-style-type: none"> <li>❖ Facilitate the integration of trainees with group members</li> <li>❖ Conduct close</li> </ul>	<ul style="list-style-type: none"> <li>❖ Introduce the trainees with their peers</li> </ul>



	<ul style="list-style-type: none"> <li>❖ Brief the thematic issues of the work</li> </ul>	other group member	<p>follow up</p> <ul style="list-style-type: none"> <li>❖ Introduce the trainees with other group member</li> <li>❖ Inform the group members to speak loudly</li> </ul>	
<b>Exercise</b>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up and guidance</li> <li>❖ Provide tutorial support if necessary</li> <li>❖ provide special attention in the process</li> </ul>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up and guidance</li> <li>❖ Provide tutorial support if necessary</li> <li>❖ provide special attention in the process/practical training</li> <li>❖ Introduce new and relevant vocabularies</li> </ul>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up and guidance</li> <li>❖ Provide tutorial support if necessary</li> <li>❖ provide special attention in the process/ practical training</li> </ul>	<ul style="list-style-type: none"> <li>❖ Assign peer trainees</li> <li>❖ Use additional nominal hours if necessary</li> </ul>

<p><b>Individual assignment</b></p>	<ul style="list-style-type: none"> <li>❖ prepare the assignment questions in large text/Brail</li> <li>❖ Encourage the trainees to prepare and submit the assignment in large texts/Brail</li> <li>❖ Make available recorded assignment questions</li> <li>❖ Facilitate the trainees to prepare and submit the assignment in soft or hard copy</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use sign language interpreter</li> <li>❖ Provide briefing /orientation on the assignment</li> <li>❖ Provide visual recorded material</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide briefing /orientation on the assignment</li> <li>❖ Provide visual recorded material</li> </ul>	
<p><b>ASSESSMENT METHODS:</b></p>				
<p><b>Interview</b></p>		<ul style="list-style-type: none"> <li>❖ Use sign language interpreter</li> <li>❖ Ensure or conform whether the proper communication was conducted with the trainee through the service of the sign language interpreter</li> <li>❖ Use short and clear questioning</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Speak loudly</li> <li>❖ Using sign language interpreter if necessary</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use written response as an option for the trainees having speech challenges</li> </ul>

<p><b>Written test</b></p>	<ul style="list-style-type: none"> <li>❖ Prepare the exam in large texts/Brail</li> <li>❖ Use interview as an option if necessary</li> <li>❖ Prepare the exam in audio format</li> <li>❖ Assign human reader (if necessary)</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers</li> <li>❖ Avoid essay writing</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers if necessary.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use oral response as an option to give answer for trainees having severe upper limb impairment</li> <li>❖ Time extension for trainees having severe upper limb impairment</li> </ul>
<p><b>Demonstration/Observation</b></p>	<ul style="list-style-type: none"> <li>❖ Brief the instruction or provide them in large text/Brail</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use sign language interpreter</li> <li>❖ Brief on the instruction of the exam</li> <li>❖ Provide activity-based/practical assessment method</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide activity based assessment</li> <li>❖ Brief on the instruction of the exam</li> <li>❖ Use loud voice</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide activity based assessment</li> <li>❖ Conduct close follow up</li> <li>❖ Time extension</li> </ul>

**ASSESSMENT CRITERIA:**

**LO.1 Confirm pre-preparation tasks**

- Appropriate work instructions and process recipe are selected and confirmed as the authorized or correct version to be applied
- Chemicals required for the processes are confirmed
- Equipment required for the chemical preparation is identified and checked for condition, including all necessary precautions and use of safety gear
- Non-conforming equipment is reported

**LO.2 Prepare chemicals and equipment**

- Appropriate PPE is worn or used in accordance with OHS practices
- Equipment is organized and made ready for use in the preparation of chemicals
- Calculations and weighing are accurately performed to determine particular requirements
- Chemicals are prepared in accordance with process recipe and workplace procedures, taking into account all safety requirements
- Safe lifting and materials handling techniques are correctly applied

**LO.3 Store unused chemicals**

- Unused chemicals are repackaged in accordance with chemical manufacturers and relevant safety requirements
- Chemicals are stored in accordance with workplace and recognized safety procedures using appropriate manual handling techniques
- Record and document procedures and chemicals used accordance with regulatory and workplace requirements

**LO.4 Clean and store equipment and dispose wastes**

- Equipment and work place are cleaned in accordance with relevant procedure
- Equipment is stored appropriately after use to ensure readiness for next application.
- Procedures for handling, storage and disposal of wastes are

### Annex: Resource Requirements

IND LEP2 M03 1221: Preparing Chemicals for leather processing				
Item No.	Category/Item	Description/ Specifications	Qty	Recommended Ratio (Item: Learner)
<b>A. Learning Materials</b>				
1.	TTLM	Prepared by trainer	25	1:1
2	Reference			
2.1	The Tanning Engineering	Notebooks by Assomac Edition 2002	5	1:5
2.2	An Introduction to the Principle of leather manufacture,	S.S Dutta, 1999	5	1:5
2.3	Leather Technologists Pocket Book,	SLTC 1999	5	1:5
2.4	Chemical manufacture's Material Safety Data Sheet	Chemical manufacturer	5	1:5
<b>B. Learning Facilities &amp; Infrastructure</b>				
1.	Lecture Room		1	1:25
2.	Library		1	1:25
3.	Model tannery		1	1:25
<b>C. Consumable Materials</b>				
Stationery:				
1	White board marker /chalk	Different color	1pkt	1:25
2	Paper	A4	1 rim	1:25
3	Duster	-	2 pcs	2:25

<b>D.</b>	<b>Tools and Equipment</b>			
1	Projector	-	1Pcs	1:25
2	White/Black boar		1	1:25
3	Laptop computer	-	1Pcs	1:25
4	PPE (glove, apron, boot, coat, eye google, face mask)		25	1:1
5	Measuring device (Baume, plastic graduated cylinder, weighing balance, Viscometer (Ford cup) )	Digital/analogue	1	1:25
6	Broom		5	1:5
7	Pallet	Wooden/plastic	1	1:25
8	Trolley	Hydraulic/wheel barrow	1	1:25
9	Chemical container	Reusable	As required	

<b>LEARNING MODULE 04</b>	
<b>TVET-PROGRAMME TITLE: Leather Processing Level II</b>	
• <b>MODULE TITLE: Performing Beamhouse and Tanning Operations</b>	
<b>MODULE CODE: IND LEP2 M04 1221</b>	
NOMINAL DURATION :100 Hours	
<b>MODULE DESCRIPTION:</b> This module covers the knowledge, attitude and skills required to operate machines and processing vessels or drums in beam house and tanning operations	
<p><b>LEARNING OUTCOMES</b></p> <p>At the end of the module the learner will be able to:</p> <p>LO.1 Confirm Instructions and operational requirements</p> <p>LO.2 Undertake Process Operations</p> <p>LO.3 Undertake Mechanical Operations</p>	
<p><b>MODULE CONTENTS:</b></p> <p><b>LO.1 Instructions and operational requirement</b></p> <p>1.1 Required facilities for process vessels and machines</p> <p>1.2 Work instructions and procedures for process and mechanical operations</p> <p>1.3 Process vessel and machine settings and preparations</p> <p><b>LO.2 Undertake Process Operations</b></p> <p>2.1 Checking status of skin/hide or pelt for processing</p> <p>2.2 Operating beam house and tanning process vessels</p> <p>2.3 Process controlling parameters</p> <p>2.4 Handling Beamhouse and tanning process liquid waste</p> <p><b>LO.3 Undertake Mechanical Operations</b></p> <p>3.1 Checking status of skin/hide or pelt for machine operation</p> <p>3.2 Operating beam house and tanning machines</p> <p>3.3 Process controlling parameters</p> <p>3.4 Handling Beamhouse and tanning mechanical operations solid waste</p>	

<b>LEARNING METHODS:</b>				
<b>For None Impaired Trainees</b>	<b>Reasonable Adjustment for Trainees with Disability (TWD)</b>			
	<b>Low Vision and Blind</b>	<b>Deaf</b>	<b>Hard of hearing</b>	<b>Physical impairment</b>
<b>Lecture-discussion</b>	<ul style="list-style-type: none"> <li>❖ Provide large print text</li> <li>❖ Prepare the lecture in <b>Audio/video &amp; in Brail format</b></li> <li>❖ Organize the class room seating arrangement to be accessible to trainees</li> <li>❖ Write short notes on the black/white board using large text</li> <li>❖ Make sure the luminosity of the light of class room is kept</li> <li>❖ Use normal tone of voice</li> <li>❖ Encourage trainees to record the lecture in audio format</li> <li>❖ Provide Orientation on the physical feature of the work shop</li> <li>❖ Summarize main points</li> </ul>	<ul style="list-style-type: none"> <li>❖ Assign sign language interpreter</li> <li>❖ Arrange the class room seating to be conducive for eye to eye contact</li> <li>❖ Make sure the luminosity of the light of class room is kept</li> <li>❖ Introduce new and relevant vocabularies</li> <li>❖ Use short and clear sentences</li> <li>❖ Give emphasis on visual lecture and ensure the attention of the trainees</li> <li>❖ Avoid movement during lecture time</li> <li>❖ Present the lecture in video</li> </ul>	<ul style="list-style-type: none"> <li>❖ Organize the class room seating arrangement to be accessible to trainees</li> <li>❖ Speak loudly</li> <li>❖ Ensure the attention of the trainees</li> <li>❖ Present the lecture in video format</li> <li>❖ Ensure the attention of the trainees</li> </ul>	<ul style="list-style-type: none"> <li>❖ Organize the class room seating arrangement to be accessible for wheelchairs users.</li> <li>❖ Facilitate and support the trainees who have severe impairments on their upper limbs to take note</li> <li>❖ Provide Orientation on the physical feature of the work shop</li> </ul>



		format		
		❖ Summarize main points		
<b>Demonstration</b>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up</li> <li>❖ Use verbal description</li> <li>❖ Provide special attention in the process of guidance</li> <li>❖ facilitate the support of peer trainees</li> <li>❖ Prepare &amp; use simulation</li> </ul>	<ul style="list-style-type: none"> <li>❖ use Sign language interpreter</li> <li>❖ Use video recorded material</li> <li>❖ Ensure attention of the trainees</li> <li>❖ Provide structured training</li> <li>❖ Show clear and short method</li> <li>❖ Use gesture</li> <li>❖ Provide tutorial support</li> <li>❖ (if necessary)</li> </ul>	<ul style="list-style-type: none"> <li>❖ Illustrate in clear &amp; short method</li> <li>❖ Use Video recorded material</li> <li>❖ Ensure the attention of the trainees</li> <li>❖ Provide tutorial support</li> <li>❖ (if necessary)</li> </ul>	<ul style="list-style-type: none"> <li>❖ Facilitate and support the trainees having severe upper limbs impairment to operate equipments/machines</li> <li>❖ Assign peer trainees to assist</li> <li>❖ Conduct close follow up</li> <li>❖ Provide tutorial support</li> <li>❖ (if necessary)</li> </ul>
<b>Group discussion</b>	<ul style="list-style-type: none"> <li>❖ Facilitate the integration of trainees with group members</li> <li>❖ Conduct close follow up</li> <li>❖ Introduce the trainees with other group member</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use sign language interpreters</li> <li>❖ Facilitate the integration of trainees with group members</li> <li>❖ Conduct close follow up</li> <li>❖ Introduce the trainees with</li> </ul>	<ul style="list-style-type: none"> <li>❖ Facilitate the integration of trainees with group members</li> <li>❖ Conduct close</li> </ul>	<ul style="list-style-type: none"> <li>❖ Introduce the trainees with their peers</li> </ul>

	<ul style="list-style-type: none"> <li>❖ Brief the thematic issues of the work</li> </ul>	other group member	<p>follow up</p> <ul style="list-style-type: none"> <li>❖ Introduce the trainees with other group member</li> <li>❖ Inform the group members to speak loudly</li> </ul>	
<b>Exercise</b>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up and guidance</li> <li>❖ Provide tutorial support if necessary</li> <li>❖ provide special attention in the process</li> </ul>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up and guidance</li> <li>❖ Provide tutorial support if necessary</li> <li>❖ provide special attention in the process/practical training</li> <li>❖ Introduce new and relevant vocabularies</li> </ul>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up and guidance</li> <li>❖ Provide tutorial support if necessary</li> <li>❖ provide special attention in the process/ practical training</li> </ul>	<ul style="list-style-type: none"> <li>❖ Assign peer trainees</li> <li>❖ Use additional nominal hours if necessary</li> </ul>

<p><b>Individual assignment</b></p>	<ul style="list-style-type: none"> <li>❖ prepare the assignment questions in large text/Brail</li> <li>❖ Encourage the trainees to prepare and submit the assignment in large texts/Brail</li> <li>❖ Make available recorded assignment questions</li> <li>❖ Facilitate the trainees to prepare and submit the assignment in soft or hard copy</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use sign language interpreter</li> <li>❖ Provide briefing /orientation on the assignment</li> <li>❖ Provide visual recorded material</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide briefing /orientation on the assignment</li> <li>❖ Provide visual recorded material</li> </ul>	
<p><b>ASSESSMENT METHODS:</b></p>				
<p><b>Interview</b></p>		<ul style="list-style-type: none"> <li>❖ Use sign language interpreter</li> <li>❖ Ensure or conform whether the proper communication was conducted with the trainee through the service of the sign language interpreter</li> <li>❖ Use short and clear questioning</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Speak loudly</li> <li>❖ Using sign language interpreter if necessary</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use written response as an option for the trainees having speech challenges</li> </ul>

<p><b>Written test</b></p>	<ul style="list-style-type: none"> <li>❖ Prepare the exam in large texts/Brail</li> <li>❖ Use interview as an option if necessary</li> <li>❖ Prepare the exam in audio format</li> <li>❖ Assign human reader (if necessary)</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers</li> <li>❖ Avoid essay writing</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers if necessary.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use oral response as an option to give answer for trainees having severe upper limb impairment</li> <li>❖ Time extension for trainees having severe upper limb impairment</li> </ul>
<p><b>Demonstration/Observation</b></p>	<ul style="list-style-type: none"> <li>❖ Brief the instruction or provide them in large text/Brail</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use sign language interpreter</li> <li>❖ Brief on the instruction of the exam</li> <li>❖ Provide activity-based/practical assessment method</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide activity based assessment</li> <li>❖ Brief on the instruction of the exam</li> <li>❖ Use loud voice</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide activity based assessment</li> <li>❖ Conduct close follow up</li> <li>❖ Time extension</li> </ul>

**ASSESSMENT CRITERIA:**

**LO.1 Instructions and operational requirement**

- Required facilities are identified and confirmed
- Necessary settings and preparation for process vessels and machines are confirmed
- Instructions and procedure for process and mechanical operations are confirmed and applied

**LO.2 Undertake Process Operations**

- Drum or vessel loads and batches are accurately determined by counting, weight, volume or work place procedures
- Hides/ skins and pelts to be prepared for process operations are assembled and made ready to be loaded into drum or vessel
- Hides/skins and pelts are loaded, drum or vessel is operated according to OHS practices and operating procedures
- Processing sheet is correctly followed and required process parameters are checked
- Quality of the pelts/leather are checked by using appropriate tools/equipment as per the process sheet
- At the completion of process, the pelts or tanned leather are unloaded and moved to the next processes
- The process liquid or waste water is discharged through the correct pipeline as per the ETP (effluent treatment plant) operating procedure
- Records and other documentation are clearly and accurately completed where required

**LO.3 Undertake Mechanical Operations**

- Machine is started in accordance with workplace standard operating procedures
- Machine is started in accordance with workplace standard operating procedures
- Hides /skins and pelts are fed through the machine, as per the requirement in accordance with OHS practices and workplace procedures
- Tanned leather is produced based on the given recipe

- At the end of each mechanical operation, the processed pelts and tanned leather are labeled and moved to the next process/machine operation
- Quality of the pelts/leather are checked visually/ by using appropriate tools/equipment at the end of each mechanical operation
- Machine is stopped or shut down in accordance with all safety and workplace standard procedures
- Records are completed

## Annex: Resource Requirements

<b>IND LEP2 M04 1221: Perform Beamhouse and Tanning operations</b>				
<b>Item No.</b>	<b>Category/Item</b>	<b>Description/ Specifications</b>	<b>Qty</b>	<b>Recommended Ratio (Item: Learner)</b>
<b>A. Learning Materials</b>				
1.	TTLM	Prepared by trainer	25	1:1
2	Reference			
2.1	Leather Technicians Hand book by	J.H. Sharphouse, BSc. Revised edition 1983	1	1:25
2.2	Process vessel and machine operation manual	Machine manufacturer		
2.3	Work instruction		5	1:5
2.4	Process recipe		5	1:5
<b>B. Learning Facilities &amp; Infrastructure</b>				
1.	Lecture Room		1	1:25
2.	Library		1	1:25
3.	Model tannery		1	1:25
<b>C. Consumable Materials</b>				
	Stationery:			
1	White board marker /Chalk	Different color	1pkt	1:25
2	Paper	A4	1 rim	1:25
3	Duster	-	2 pcs	2:25
<b>D. Tools and Equipment</b>				
1	Projector	Standard	1Pcs	1:25
2	Laptop	Standard	1Pcs	1:25
3.	White/Black board	Standard	1	1:25

4	PPE (glove, apron, boot, overall coat, eye google, face mask)	Standard	25	1:1
5	Measuring device (Baume, water flow meter, plastic graduated cylinder, thermometer, weighing balance, pH meter/paper)	Standard	1	1:25



<b>LEARNING MODULE 05</b>
<b>TVET-PROGRAMME TITLE: Leather Processing Level II</b>
<b>MODULE TITLE: Preforming Post-tanning and Crust Operation</b>
<b>MODULE CODE: IND LEP2 M05 1221</b>
NOMINAL DURATION : 119 Hours
<b>MODULE DESCRIPTION:</b> This module covers the knowledge, attitude and skills required to operate the various machines and process vessels or drum used for post tanning operation to convert tanned leather into natural or dyed crust.
<p><b>LEARNING OUTCOMES</b></p> <p>At the end of the module the learner will be able to:</p> <p>LO.1 Confirm Instructions and operational requirement</p> <p>LO.2 Operate drum to process tanned leather</p> <p>LO.3 Produce Crust leather</p>
<p><b>MODULE CONTENTS:</b></p> <p><b>LO.1 Confirm instructions and operational requirement</b></p> <p>1.1 Types of drum and machine used in post-tanning operations</p> <p>1.2 Work instruction for drum and machines operation in post-tanning</p> <p>1.2.1 Setting and preparation of drums and machines</p> <p>1.2.2 Input requirements for post-tanning operations</p> <p><b>LO.2 Operate drum to process tanned leather</b></p> <p>2.1 Determine drum loads and process batches</p> <p>2.1 Checking status of tanned leather for drum processing</p> <p>2.2 Operating drum as per workplace procedures</p> <p>2.3 Checking process control parameters</p> <p>2.4 Controlling drum operations outputs</p> <p>2.4.1 Checking quality of natural or dyed crust</p> <p>2.4.2 Types and discharging liquid wastes in post-tanning</p> <p>2.5 Cleaning work area and recording drum operation in post-tanning</p>

### **LO.3 Operate machineries to produce Crust leather**

- 3.1 Checking status of tanned leather for machine operation
- 3.2 Operating post-tanning machineries
- 3.3 Checking process control parameters in machine operations
- 3.4 Controlling post tanning machine operations outputs
  - 3.4.1 Checking quality of natural or dyed crust leather
  - 3.4.2 Disposal and types of solid waste
- 3.5 Cleaning work area and recording post-tanning operation

<b>LEARNING METHODS:</b>				
<b>For None Impaired Trainees</b>	<b>Reasonable Adjustment for Trainees with Disability (TWD)</b>			
	<b>Low Vision and Blind</b>	<b>Deaf</b>	<b>Hard of hearing</b>	<b>Physical impairment</b>
<b>Lecture-discussion</b>	<ul style="list-style-type: none"> <li>❖ Provide large print text</li> <li>❖ Prepare the lecture in <b>Audio/video &amp; in Brail format</b></li> <li>❖ Organize the class room seating arrangement to be accessible to trainees</li> <li>❖ Write short notes on the black/white board using large text</li> <li>❖ Make sure the luminosity of the light of class room is kept</li> <li>❖ Use normal tone of voice</li> <li>❖ Encourage trainees to record the lecture in audio format</li> <li>❖ Provide Orientation on the physical feature of the work shop</li> <li>❖ Summarize main points</li> </ul>	<ul style="list-style-type: none"> <li>❖ Assign sign language interpreter</li> <li>❖ Arrange the class room seating to be conducive for eye to eye contact</li> <li>❖ Make sure the luminosity of the light of class room is kept</li> <li>❖ Introduce new and relevant vocabularies</li> <li>❖ Use short and clear sentences</li> <li>❖ Give emphasis on visual lecture and ensure the attention of the trainees</li> <li>❖ Avoid movement during lecture time</li> <li>❖ Present the lecture in video</li> </ul>	<ul style="list-style-type: none"> <li>❖ Organize the class room seating arrangement to be accessible to trainees</li> <li>❖ Speak loudly</li> <li>❖ Ensure the attention of the trainees</li> <li>❖ Present the lecture in video format</li> <li>❖ Ensure the attention of the trainees</li> </ul>	<ul style="list-style-type: none"> <li>❖ Organize the class room seating arrangement to be accessible for wheelchairs users.</li> <li>❖ Facilitate and support the trainees who have severe impairments on their upper limbs to take note</li> <li>❖ Provide Orientation on the physical feature of the work shop</li> </ul>

		format		
		❖ Summarize main points		
<b>Demonstration</b>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up</li> <li>❖ Use verbal description</li> <li>❖ Provide special attention in the process of guidance</li> <li>❖ facilitate the support of peer trainees</li> <li>❖ Prepare &amp; use simulation</li> </ul>	<ul style="list-style-type: none"> <li>❖ use Sign language interpreter</li> <li>❖ Use video recorded material</li> <li>❖ Ensure attention of the trainees</li> <li>❖ Provide structured training</li> <li>❖ Show clear and short method</li> <li>❖ Use gesture</li> <li>❖ Provide tutorial support</li> <li>❖ (if necessary)</li> </ul>	<ul style="list-style-type: none"> <li>❖ Illustrate in clear &amp; short method</li> <li>❖ Use Video recorded material</li> <li>❖ Ensure the attention of the trainees</li> <li>❖ Provide tutorial support</li> <li>❖ (if necessary)</li> </ul>	<ul style="list-style-type: none"> <li>❖ Facilitate and support the trainees having severe upper limbs impairment to operate equipments/ machines</li> <li>❖ Assign peer trainees to assist</li> <li>❖ Conduct close follow up</li> <li>❖ Provide tutorial support</li> <li>❖ (if necessary)</li> </ul>
<b>Group discussion</b>	<ul style="list-style-type: none"> <li>❖ Facilitate the integration of trainees with group members</li> <li>❖ Conduct close follow up</li> <li>❖ Introduce the trainees with other group member</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use sign language interpreters</li> <li>❖ Facilitate the integration of trainees with group members</li> <li>❖ Conduct close follow up</li> <li>❖ Introduce the trainees with</li> </ul>	<ul style="list-style-type: none"> <li>❖ Facilitate the integration of trainees with group members</li> <li>❖ Conduct close</li> </ul>	<ul style="list-style-type: none"> <li>❖ Introduce the trainees with their peers</li> </ul>

	<ul style="list-style-type: none"> <li>❖ Brief the thematic issues of the work</li> </ul>	other group member	<p>follow up</p> <ul style="list-style-type: none"> <li>❖ Introduce the trainees with other group member</li> <li>❖ Inform the group members to speak loudly</li> </ul>	
<b>Exercise</b>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up and guidance</li> <li>❖ Provide tutorial support if necessary</li> <li>❖ provide special attention in the process</li> </ul>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up and guidance</li> <li>❖ Provide tutorial support if necessary</li> <li>❖ provide special attention in the process/practical training</li> <li>❖ Introduce new and relevant vocabularies</li> </ul>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up and guidance</li> <li>❖ Provide tutorial support if necessary</li> <li>❖ provide special attention in the process/ practical training</li> </ul>	<ul style="list-style-type: none"> <li>❖ Assign peer trainees</li> <li>❖ Use additional nominal hours if necessary</li> </ul>
<b>Individual assignment</b>	<ul style="list-style-type: none"> <li>❖ prepare the assignment questions in large text/Brail</li> <li>❖ Encourage the trainees to prepare</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use sign language interpreter</li> <li>❖ Provide briefing /orientation on the assignment</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide briefing /orientation on the assignment</li> </ul>	

	<p>and submit the assignment in large texts/Brail</p> <ul style="list-style-type: none"> <li>❖ Make available recorded assignment questions</li> <li>❖ Facilitate the trainees to prepare and submit the assignment in soft or hard copy</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide visual recorded material</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide visual recorded material</li> </ul>	
<b>ASSESSMENT METHODS:</b>				
<b>Interview</b>		<ul style="list-style-type: none"> <li>❖ Use sign language interpreter</li> <li>❖ Ensure or conform whether the proper communication was conducted with the trainee through the service of the sign language interpreter</li> <li>❖ Use short and clear questioning</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Speak loudly</li> <li>❖ Using sign language interpreter if necessary</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use written response as an option for the trainees having speech challenges</li> </ul>

<p><b>Written test</b></p>	<ul style="list-style-type: none"> <li>❖ Prepare the exam in large texts/Brail</li> <li>❖ Use interview as an option if necessary</li> <li>❖ Prepare the exam in audio format</li> <li>❖ Assign human reader (if necessary)</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers</li> <li>❖ Avoid essay writing</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers if necessary.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use oral response as an option to give answer for trainees having severe upper limb impairment</li> <li>❖ Time extension for trainees having severe upper limb impairment</li> </ul>
<p><b>Demonstration/Observation</b></p>	<ul style="list-style-type: none"> <li>❖ Brief the instruction or provide them in large text/Brail</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use sign language interpreter</li> <li>❖ Brief on the instruction of the exam</li> <li>❖ Provide activity-based/practical assessment method</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide activity based assessment</li> <li>❖ Brief on the instruction of the exam</li> <li>❖ Use loud voice</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide activity based assessment</li> <li>❖ Conduct close follow up</li> <li>❖ Time extension</li> </ul>

## ASSESSMENT CRITERIA:

### LO.1 Confirm instructions and operational requirement

- necessary settings and preparation for process vessel and machine operation are confirmed
- input requirements to operate the machines/vessels to convert the tanned leather into natural or dyed crust are confirmed
- Instruction and procedures for machines and vessels operation are applied.

### LO.2 Operate drum to process tanned leather

- Drum loads and batches are accurately determined by counting, weight, volume or work place procedures
- Tanned leather to be prepared for drum operations are assembled and made ready to be loaded into post tanning and dyeing drums
- Tanned leather is loaded and drums are operated according to OHS practices and operating procedures
- Processing sheet is correctly followed and required process parameters are checked to produced Natural or dyed crust
- Post tanning and dyeing drum operations outputs are controlled
- At the completion of process, the natural or dyed crust leather are unloaded.
- The processed liquid or waste water discharged through the correct pipeline as per the ETP (effluent treatment plant) operating procedure
- Post-tanning drums are stopped or shut down in accordance with all safety and workplace standard procedures
- Work places are cleaned as per according to OHS practices
- Records and other documentation are clearly and accurately completed where required

### LO.3 Operate machines to covert tanned leather into natural or dyed crust leather

- Machine is started in accordance with workplace procedures
- Tanned leathers are fed through the various machine in accordance with OHS practices and workplace procedures



- At the end of each mechanical operation, the processed crust leathers are labeled and moved to the next operations
- Quality of the crust leather are visually checked continuously at the end of each mechanical operation
- Machine is stopped or shut down in accordance with all safety and workplace standard procedures
- Records are completed

### Annex: Resource Requirements

IND LEP2 M05 1221: Preform Post Tanning and Crust Operation				
Item No.	Category/Item	Description/ Specifications	Qty	Recommended Ratio (Item: Learner)
<b>A. Learning Materials</b>				
1.	TTLM	Prepared by trainer	25	1:1
2	Reference			
2.1	Leather Technicians Hand book	J.H. Sharpouse, BSc. Revised edition 1983	5	1:5
2.2	Process vessel and machine operation manual	Machine manufacturer	1	1:25
<b>B. Learning Facilities &amp; Infrastructure</b>				
1.	Lecture Room		1	1:25
2.	Library		1	1:25
3.	Model tannery		1	1:25
<b>C. Consumable Materials</b>				
Stationery:				
1	White board marker /chalk	Different color	1pkt	1:25
2	Paper	A4	1 rim	1:25
3	Duster	-	2 pcs	2:25
<b>D. Required materials</b>				
1	Tanned Leather		As required	
2	Post-tanning chemical (syntans, fatliquors, dyes, etc)		As required	
<b>E. Tools and Equipment</b>				
1	Projector		1Pcs	1:25

		-		
2	PH meter/paper, Indicators, weighing balance, Cutter, Trolleys and carts	standard	As required	
3	Laptop computer	-	1Pcs	1:25
4	PPE (glove, apron, boot, overall coat, eye google, face mask)		25	1:1
5	Measuring device (water flow meter, portable moisture content meter, thickness gauge)		1	1:25

<b>LEARNING MODULE 06</b>	
<b>TVET-PROGRAMME TITLE: Leather Processing Level II</b>	
<b>MODULE TITLE: Performing Finishing operation</b>	
<b>MODULE CODE : IND LEP2 M06 1221</b>	
NOMINAL DURATION : 96 Hours	
<b>MODULE DESCRIPTION:</b> This module covers the knowledge, attitude and skills required to operate finishing machines and perform finishing process used to convert crust leathers to different types of finished leathers according to customer requirements.	
<p><b>LEARNING OUTCOMES</b></p> <p>At the end of the module the learner will be able to:</p> <ul style="list-style-type: none"> <li><b>LO.1 Prepare for finishing operations</b></li> <li><b>LO.2 Operate machines to produce finished leathers</b></li> <li><b>LO.3 Apply formulated chemicals</b></li> <li><b>LO.4 Monitor product quality</b></li> </ul>	
<p><b>MODULE CONTENTS:</b></p> <p><b>LO.1 Preparation for finishing operations</b></p> <ul style="list-style-type: none"> <li>1.1. Types of leather finishing methods</li> <li>1.2. Types of leather finishing chemicals, machine, equipment and tools</li> <li>1.3. Preparing finishing formulations for different types of leather products</li> </ul> <p><b>LO.2 Operate machines to produce finished leathers</b></p> <ul style="list-style-type: none"> <li>2.1. Machine setting and adjustment</li> <li>2.2. Work place procedures and OHS practices</li> <li>2.3. Getting ready leather finishing machine <ul style="list-style-type: none"> <li>2.1.1 identify malfunctions</li> <li>2.1.2 Rectify minor machine fault</li> </ul> </li> <li>2.4. Operating leather finishing machineries</li> </ul>	

**LO.3 Apply formulated chemicals**

- 3.1 Stages of leather finishing coats
- 3.2 Applying methods of Leather finishing coats
- 3.3 Handling and transporting of finished leathers
- 3.4 Cleaning workplace area and waste disposal after finishing operations

**LO4. Monitor product quality**

- 4.1 Quality requirements for finished leather
- 4.2 Checking quality parameters of finished leather

<b>LEARNING METHODS:</b>				
<b>For None Impaired Trainees</b>	<b>Reasonable Adjustment for Trainees with Disability (TWD)</b>			
	<b>Low Vision and Blind</b>	<b>Deaf</b>	<b>Hard of hearing</b>	<b>Physical impairment</b>
<b>Lecture-discussion</b>	<ul style="list-style-type: none"> <li>❖ Provide large print text</li> <li>❖ Prepare the lecture in <b>Audio/video &amp; in Brail format</b></li> <li>❖ Organize the class room seating arrangement to be accessible to trainees</li> <li>❖ Write short notes on the black/white board using large text</li> <li>❖ Make sure the luminosity of the light of class room is kept</li> <li>❖ Use normal tone of voice</li> <li>❖ Encourage trainees to record the lecture in audio format</li> <li>❖ Provide Orientation on the physical feature of the work shop</li> <li>❖ Summarize main points</li> </ul>	<ul style="list-style-type: none"> <li>❖ Assign sign language interpreter</li> <li>❖ Arrange the class room seating to be conducive for eye to eye contact</li> <li>❖ Make sure the luminosity of the light of class room is kept</li> <li>❖ Introduce new and relevant vocabularies</li> <li>❖ Use short and clear sentences</li> <li>❖ Give emphasis on visual lecture and ensure the attention of the trainees</li> <li>❖ Avoid movement during lecture time</li> <li>❖ Present the lecture in video</li> </ul>	<ul style="list-style-type: none"> <li>❖ Organize the class room seating arrangement to be accessible to trainees</li> <li>❖ Speak loudly</li> <li>❖ Ensure the attention of the trainees</li> <li>❖ Present the lecture in video format</li> <li>❖ Ensure the attention of the trainees</li> </ul>	<ul style="list-style-type: none"> <li>❖ Organize the class room seating arrangement to be accessible for wheelchairs users.</li> <li>❖ Facilitate and support the trainees who have severe impairments on their upper limbs to take note</li> <li>❖ Provide Orientation on the physical feature of the work shop</li> </ul>

		format		
		❖ Summarize main points		
<b>Demonstration</b>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up</li> <li>❖ Use verbal description</li> <li>❖ Provide special attention in the process of guidance</li> <li>❖ facilitate the support of peer trainees</li> <li>❖ Prepare &amp; use simulation</li> </ul>	<ul style="list-style-type: none"> <li>❖ use Sign language interpreter</li> <li>❖ Use video recorded material</li> <li>❖ Ensure attention of the trainees</li> <li>❖ Provide structured training</li> <li>❖ Show clear and short method</li> <li>❖ Use gesture</li> <li>❖ Provide tutorial support</li> <li>❖ (if necessary)</li> </ul>	<ul style="list-style-type: none"> <li>❖ Illustrate in clear &amp; short method</li> <li>❖ Use Video recorded material</li> <li>❖ Ensure the attention of the trainees</li> <li>❖ Provide tutorial support</li> <li>❖ (if necessary)</li> </ul>	<ul style="list-style-type: none"> <li>❖ Facilitate and support the trainees having severe upper limbs impairment to operate equipments/ machines</li> <li>❖ Assign peer trainees to assist</li> <li>❖ Conduct close follow up</li> <li>❖ Provide tutorial support</li> <li>❖ (if necessary)</li> </ul>
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<b>Exercise</b>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up and guidance</li> <li>❖ Provide tutorial support if necessary</li> <li>❖ provide special attention in the process</li> </ul>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up and guidance</li> <li>❖ Provide tutorial support if necessary</li> <li>❖ provide special attention in the process/practical training</li> <li>❖ Introduce new and relevant vocabularies</li> </ul>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up and guidance</li> <li>❖ Provide tutorial support if necessary</li> <li>❖ provide special attention in the process/ practical training</li> </ul>	<ul style="list-style-type: none"> <li>❖ Assign peer trainees</li> <li>❖ Use additional nominal hours if necessary</li> </ul>
<b>Individual assignment</b>	<ul style="list-style-type: none"> <li>❖ prepare the assignment questions in large text/Brail</li> <li>❖ Encourage the trainees to prepare</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use sign language interpreter</li> <li>❖ Provide briefing /orientation on the assignment</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide briefing /orientation on the assignment</li> </ul>	



	<p>and submit the assignment in large texts/Brail</p> <ul style="list-style-type: none"> <li>❖ Make available recorded assignment questions</li> <li>❖ Facilitate the trainees to prepare and submit the assignment in soft or hard copy</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide visual recorded material</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide visual recorded material</li> </ul>	
<b>ASSESSMENT METHODS:</b>				
<b>Interview</b>		<ul style="list-style-type: none"> <li>❖ Use sign language interpreter</li> <li>❖ Ensure or conform whether the proper communication was conducted with the trainee through the service of the sign language interpreter</li> <li>❖ Use short and clear questioning</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Speak loudly</li> <li>❖ Using sign language interpreter if necessary</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use written response as an option for the trainees having speech challenges</li> </ul>

<p><b>Written test</b></p>	<ul style="list-style-type: none"> <li>❖ Prepare the exam in large texts/Brail</li> <li>❖ Use interview as an option if necessary</li> <li>❖ Prepare the exam in audio format</li> <li>❖ Assign human reader (if necessary)</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers</li> <li>❖ Avoid essay writing</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers if necessary.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use oral response as an option to give answer for trainees having severe upper limb impairment</li> <li>❖ Time extension for trainees having severe upper limb impairment</li> </ul>
<p><b>Demonstration/Observation</b></p>	<ul style="list-style-type: none"> <li>❖ Brief the instruction or provide them in large text/Brail</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use sign language interpreter</li> <li>❖ Brief on the instruction of the exam</li> <li>❖ Provide activity-based/practical assessment method</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide activity based assessment</li> <li>❖ Brief on the instruction of the exam</li> <li>❖ Use loud voice</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide activity based assessment</li> <li>❖ Conduct close follow up</li> <li>❖ Time extension</li> </ul>

## **ASSESSMENT CRITERIA:**

### **LO.1 Preparation for finishing operations**

- Types of various finishing methods are identified based on the nature of crust leather and customer requirement
- Natural or dyed crust leathers are prepared
- Availability of the required finishing chemicals, tools and equipment ensured
- Finishing formulations prepared as per the required leather products
- Finishing chemicals are accurately weighed as per the formulation, in accordance with workplace and suppliers' instructions or procedures
- Formulated chemicals are mixed as per workplace procedure

### **LO.2 Operate machines to produce various finished leathers**

- All necessary settings and preparation for machine operation are identified and assessed in accordance with specifications and workplace procedures
- Leather is fed through or into the machine in the appropriate manner and in accordance with workplace procedures and OHS practices
- Machines operated safely and any malfunctions are reported

### **LO.3 Apply formulated chemicals**

- Based on stages of finishing, finishing coats are prepared and applied as per work place procedures
- Finishing coats applied by machine or manually
- Covering effect ensured as per the requirement
- Coated leather moved for drying and subsequent mechanical operations
- Finished leather handled properly based on the nature of product and area measured prior to storage/supplying to the customer
- Work area around the machines is cleaned and maintained to meet workplace and safety standards
- Wastes disposed as per environmental and workplace procedures

#### **LO.4 Monitor product quality**

- Quality requirements for the required finished leather are correctly identified and applied for all stages of the processes
- Quality is checked visually or using appropriate testing equipment.

### Annex: Resource Requirements

IND LEO2 M06 1221: Performing finishing operation				
Item No.	Category/Item	Description/ Specifications	Qty	Recommended Ratio (Item: Learner)
<b>A.</b>	<b>Learning Materials</b>			
1.	TTLM	Prepared by trainer	25	1:1
2	Reference			
2.1	Leather Technicians Hand book	J.H. Sharphouse, BSc. Revised edition 1983	5	1:5
2.2	Theory and Practice of Leather Manufacture	K.T. Sarkar. Revised Edition 2005	5	1:5
2.3	The Tanning Engineering Notebooks	Assomac Edition 2002	5	1:5
2.4	Process vessel and machine operation manual	Machine manufacturer	5	1:5
2.5	Gerard John, Possible Defects in leather production	Machine manufacturer	5	1:5
<b>B.</b>	<b>Learning Facilities &amp; Infrastructure</b>			
1.	Lecture Room		1	1:25
2.	Library		1	1:25
3.	Model tannery		1	1:25
<b>C.</b>	<b>Consumable Materials</b>			
	Stationery:			
<b>1</b>	White board marker /chalk	Different color	1pkt	1:25
<b>2</b>	Paper	A4	1 rim	1:25
<b>3</b>	Duster	-	2 pcs	2:25

<b>D.</b>	<b>Tools and Equipment</b>			
1	Projector		1Pcs	1:25
2	Laptop computer	-	1Pcs	1:25
	White/Black board		1	1:25
3	PPE (glove, apron, boot, overall coat, eye goggle, face mask)		As required	
4.	Measuring device (weighing balance, visco-meter (Ford cup), graduated measuring cylinder, moisture meter)		1 each	1:25
5	Cotton fabric		As required	
6	Mixing rode		As required	
7	Plastic mug and bowl		As required	

<b>LEARNING MODULE 07</b>	
<b>TVET-PROGRAMME TITLE: Leather Processing Level II</b>	
<b>MODULE TITLE: Operating Tannery Effluent Treatment Plant</b>	
<b>MODULE CODE: IND LEP2 M07 1221</b>	
NOMINAL DURATION: 80 Hours	
<b>MODULE DESCRIPTION:</b> This module covers the attitude, knowledge and skills required to perform the tasks associated with operating machines used for tannery effluent treatment plant	
<b>LEARNING OUTCOMES</b>	
At the end of the module the learner will be able to:	
LO.1 Perform pre-operations tasks	
LO.2 Perform primary treatment	
LO.3 Perform secondary treatment	
LO.4 Perform sludge dewatering	
LO.5 Perform tertiary treatment	
LO.6 Maintain documents and records	
<b>MODULE CONTENTS:</b>	
<b>LO.1 Perform pre-operations tasks</b>	
1.1 Regional/national effluent treatment standard limit	
1.2 Work instruction and condition of effluent treatment plant machines	
1.3 Segregating tannery liquid wastes	
1.4 Removal of solid particulates from tannery liquid waste	
<b>LO.2 Perform primary treatment</b>	
2.1 Oxidation of Lime/sulphide liquid waste	
2.2 Treating chrome liquid waste	
2.3 Homogenization or equalization of general tannery effluent	
2.4 Chemical preparations and dosing during primary treatment	

2.5 Primary sedimentation and sludge discharge

**LO.3 Perform secondary treatment**

3.1 Lifting and oxidation of primary treated effluent

3.2 Chemical preparations and dosing

3.3 Sedimentation, sludge recycling & discharging

**LO4. Perform sludge dewatering**

4.1 Sludge conditioning

4.2 Dewatering of the sludge

**LO.5 Perform tertiary treatment**

5.1 Nitrogen/ammonium & phosphorus removal from tannery effluent

5.2 Disinfecting treated tannery effluent

**LO.6 Maintain documents and records**

6.1 Documenting organization's effluent treatment compliance

6.2 Maintaining records for effluent treatment plant operations



<b>LEARNING METHODS:</b>				
<b>For None Impaired Trainees</b>	<b>Reasonable Adjustment for Trainees with Disability (TWD)</b>			
	<b>Low Vision and Blind</b>	<b>Deaf</b>	<b>Hard of hearing</b>	<b>Physical impairment</b>
<b>Lecture-discussion</b>	<ul style="list-style-type: none"> <li>❖ Provide large print text</li> <li>❖ Prepare the lecture in <b>Audio/video &amp; in Brail format</b></li> <li>❖ Organize the class room seating arrangement to be accessible to trainees</li> <li>❖ Write short notes on the black/white board using large text</li> <li>❖ Make sure the luminosity of the light of class room is kept</li> <li>❖ Use normal tone of voice</li> <li>❖ Encourage trainees to record the lecture in audio format</li> <li>❖ Provide Orientation on the physical feature of the work shop</li> <li>❖ Summarize main points</li> </ul>	<ul style="list-style-type: none"> <li>❖ Assign sign language interpreter</li> <li>❖ Arrange the class room seating to be conducive for eye to eye contact</li> <li>❖ Make sure the luminosity of the light of class room is kept</li> <li>❖ Introduce new and relevant vocabularies</li> <li>❖ Use short and clear sentences</li> <li>❖ Give emphasis on visual lecture and ensure the attention of the trainees</li> <li>❖ Avoid movement during lecture time</li> <li>❖ Present the lecture in video</li> </ul>	<ul style="list-style-type: none"> <li>❖ Organize the class room seating arrangement to be accessible to trainees</li> <li>❖ Speak loudly</li> <li>❖ Ensure the attention of the trainees</li> <li>❖ Present the lecture in video format</li> <li>❖ Ensure the attention of the trainees</li> </ul>	<ul style="list-style-type: none"> <li>❖ Organize the class room seating arrangement to be accessible for wheelchairs users.</li> <li>❖ Facilitate and support the trainees who have severe impairments on their upper limbs to take note</li> <li>❖ Provide Orientation on the physical feature of the work shop</li> </ul>

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<b>Exercise</b>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up and guidance</li> <li>❖ Provide tutorial support if necessary</li> <li>❖ provide special attention in the process</li> </ul>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up and guidance</li> <li>❖ Provide tutorial support if necessary</li> <li>❖ provide special attention in the process/practical training</li> <li>❖ Introduce new and relevant vocabularies</li> </ul>	<ul style="list-style-type: none"> <li>❖ Conduct close follow up and guidance</li> <li>❖ Provide tutorial support if necessary</li> <li>❖ provide special attention in the process/ practical training</li> </ul>	<ul style="list-style-type: none"> <li>❖ Assign peer trainees</li> <li>❖ Use additional nominal hours if necessary</li> </ul>
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	<p>and submit the assignment in large texts/Brail</p> <ul style="list-style-type: none"> <li>❖ Make available recorded assignment questions</li> <li>❖ Facilitate the trainees to prepare and submit the assignment in soft or hard copy</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide visual recorded material</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provide visual recorded material</li> </ul>	
<b>ASSESSMENT METHODS:</b>				
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<p><b>Written test</b></p>	<ul style="list-style-type: none"> <li>❖ Prepare the exam in large texts/Brail</li> <li>❖ Use interview as an option if necessary</li> <li>❖ Prepare the exam in audio format</li> <li>❖ Assign human reader (if necessary)</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers</li> <li>❖ Avoid essay writing</li> <li>❖ Time extension</li> </ul>	<ul style="list-style-type: none"> <li>❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers if necessary.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Use oral response as an option to give answer for trainees having severe upper limb impairment</li> <li>❖ Time extension for trainees having severe upper limb impairment</li> </ul>
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**ASSESSMENT CRITERIA:**

**LO.1 Perform pre-operations tasks**

- Work instructions and OHS practices related to the tannery effluent plant treatment are identified and clarified
- Liquid wastes are segregated based on their chemical properties or sources for treatment
- Condition of machines and equipment for operation is checked
- Solid particulates or suspended parts are removed manually or mechanically

**LO.2 Perform primary treatment**

- Lime/sulphide liquid waste pre-treatment is performed as per operational procedures
- Chrome liquid waste is treated as per operational procedures
- homogenization or equalization operation is performed as per operational procedures
- Chemical preparations and dosing is carried out per operational procedures
- Sedimentation, clarification and sludge discharging activities are performed per operational procedures

**LO.3 Perform secondary treatment**

- Lifting and oxidation of primary treated effluent is performed.
- Chemical preparations and dosing is carried out
- Secondary sedimentation, sludge recycling & discharging activities are performed

**LO.4 Perform sludge dewatering**

- Nitrogen/ammonium, phosphorus removal is carried out as per operational procedures
- Disinfection of treated liquid is performed

**LO.5 Perform tertiary treatment**

- Sludge from respective treatment stages output (primary, secondary and tertiary) are conditioned
- dewatering of the sludge is performed

**LO.6 Maintain documents and records**

- Relevant work instructions related to the unit are documented and maintained
- Records related to the tasks, where relevant are kept

## Annex: Resource Requirements

IND LEP2 M07 1221: Operating Tannery Effluent Treatment Plant				
Item No.	Category/Item	Description/ Specifications	Qty	Recommended Ratio (Item: Learner)
<b>A. Learning Materials</b>				
1.	TTLM	Prepared by trainer	25	1:1
2.	Reference			
2.1	Tannery effluent treatment plant operation manual		1	1:25
2.2	EEPA –Tannery Effluent Discharge Limit		1	1:25
<b>B. Learning Facilities &amp; Infrastructure</b>				
1.	Lecture Room		1	1:25
2.	Library		1	1:25
3.	Model tannery effluent treatment plant		1	1:25
<b>C. Consumable Materials</b>				
Stationery:				
1	White board marker /chalk	Different color	1pkt	1:25
2	Paper	A4	1 rim	1:25
3	Duster	-	2 pcs	2:25
4	Treatment chemicals (alum, iron sulphate, polyelectrolyte)	Industrial grade	As required	
<b>D. Tools and Equipment</b>				



1	Projector	-	1Pcs	1:25
2	Laptop computer	-	1Pcs	1:25
3	White/Black board		1	1:25
4.	PPE (glove, apron, boot, overall coat, face mask, )		25	1:1
5	Measuring device (weighing balance, flow-meter, graduated measuring cylinder, Imhoff cone, Pipette, pH meter/paper, lead acetate paper)		1	1:25
6	Plastic mug		5	1:5

## Acknowledgement

The **Ministry of Labor and Skills** wishes to thank and appreciate experts who donated their effort and time to develop this outcome-based curriculum for the TVET program Leather Processing Level II. We also thank all regional TVET curriculum experts for their active facilitation on the development of this curriculum.

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7	Genanew Dagne		Leather Industry Development Institute	TVET Team Leader	