Ministry of Labor and Skills

Natural Resources Conservation and Development

Level – II

CURRICULUM

Based on March, 2022 (V- I) Occupational standard (OS)

April, 2022

Addis Abeba, 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 and Institutes based on the occupational standard for Natural Resources Conservation and development Level II.

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

TVET-Program Design

1.1. TVET-Program Title: Natural Resources Conservation and development Level II

1.2. TVET-Program Description

The Program is designed to develop the necessary knowledge, skills and attitude of the trainees to the standard required by the occupation. The contents of this program are in line with the occupational standard. The Trainees who successfully completed the Program will be qualified to work as a **Assistant** with competencies elaborated in the respective OS. Graduates of the program will have the required qualification to work in the **Agriculture** sector in the field of **Natural Resources Conservation and development.**

The prime objective of this training program is to equip the Trainees with the identified competences specified in the OS. Graduates are therefore expected to Conduct Erosion and Sediment Control Activities, Apply in-situ Moisture Harvesting Technologies, Rehabilitate and Restore Degraded Areas, Operate and Maintain Irrigation works and Drainage Systems Conduct Agro-forestry Practices, Apply Forest Protection Strategies and Practices, Apply Sustainable Wildlife Conservation and Development, Apply Agricultural Extension service for rural development and Prevent and Eliminate MUDA in accordance with the performance criteria and evidence guide described in the OS.

1.3. TVET-Program Training Outcomes

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

AGR NRC2 03 0322 Conduct Erosion and Sediment Control Activities

AGR NRC2 02 0322 Apply in-situ Moisture Harvesting Technologies

AGR NRC2 01 0322 Rehabilitate and Restore Degraded Areas

AGR NRC2 07 0322 Operate and Maintain Irrigation works and Drainage Systems

AGR NRC2 04 0322 Conduct Agroforestry Practices

AGR NRC2 05 0322 Apply Forest Protection Strategies and Practices

AGR NRC2 06 0322 Apply Sustainable Wildlife Conservation and Development

AGR NRC2 08 0322 Apply Agricultural Extension service for Rural development

AGR NRC2 09 0322 Prevent and Eliminate MUDA

1.4. Duration of the TVET-Program

The Program will have duration of **479 *hours*** including the on school/ Institution training and on-the-job practice or cooperative training time. Such cooperative training based on realities of the industry, nature of the occupation, location of the TVET institution, and other factors will be considered in the training delivery to ensure that trainees acquire practical and workplace experience.

s.no	Unit competency	TVET Institution training		Cooperative training	Total hours	Remarks
		Theory	Practical			
1.	Conduct Erosion and Sediment Control Activities	21	37	12	70	
2.	Apply in-situ Moisture Harvesting Technologies	15	25	10	50	
3.	Rehabilitate and Restore Degraded Areas	11	18	9	38	
4.	Operate and Maintain Irrigation works and Drainage Systems	25	30	15	70	
5.	Conduct Agro-forestry Practices	15	25	10	50	
6.	Apply Forest Protection Strategies and Practices	18	30	12	60	
7.	Apply Sustainable Wildlife Conservation and Development	37	-	26	65	
8.	Apply Agricultural Extension service for Rural development	36	-	-	36	
9.	Prevent and Eliminate MUDA	15	15	10	40	
	Total				479	

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 who meets the entry requirements under items 1.7 and capable of participating in the training 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 **Ministry of Labor and Skills**.

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		Training Outcomes	Duration (In Hours)
AGR NRC2 03 0322	Conduct Erosion and Sediment Control Activities	AGR NRC2 M01 0422	Conducting Erosion and Sediment Control Activities	• Align worksite practices with erosion and sediment control principles • Implement erosion and sediment control measures • Finalize erosion and sediment control work	70
AGR NRC2 02 0322	Apply in-situ Moisture Harvesting Technologies	AGR NRC2 M02 0422	Applying in-situ Moisture Harvesting Technologies	• Prepare for work • Plan design requirements • Identify benefits and limitations of in-situ moisture harvesting technologies • Design and implement in-situ moisture harvesting technologies • Manage and maintain in-situ moisture harvesting technologies • Finalize work and report	50
AGR NRC2 01 0322	Rehabilitate and Restore Degraded Areas	AGR NRC2 M03 0422	Rehabilitating and Restore Degraded Areas	• Prepare for rehabilitation of degraded area • Demarcate area to be rehabilitated • Implement rehabilitation and restoration activities • Document and report information	38
AGR NRC2 07 0322	Operate and Maintain Irrigation works and Drainage Systems	AGR NRC2 M04 0422	Operating and Maintaining Irrigation works and Drainage Systems	• Prepare tools and materials for installation work • Set out and prepare the site • Install irrigation components • Maintain drainage systems • Lower and position pipes & clean up	70

				• Finalize work and report	
AGR NRC2 04 0322	Conduct Agroforestry Practices	AGR NRC2 M05 0422	Conducting Agroforestry Practices	• Classify the Agro forestry systems • Identify Agroforestry species • Characterize traditional agroforestry potentials • Apply Agro-Forestry technology for soil productivity and protection • Identify and manage component inter-action in agroforestry system • Record and report information	50
AGR NRC2 05 0322	Apply Forest Protection Strategies and Practices	AGR NRC2 M06 0422	Applying Forest Protection Strategies and Practices	• Apply disease and pest preventive and/or control mechanism • Implement prevention and controlling program of invasive species • Implement fire prevention and controlling program • Record and report information	60
AGR NRC2 06 0322	Apply Sustainable Wildlife Conservation and Development	AGR NRC2 M07 0422	Applying Sustainable Wildlife Conservation and Development	• Identify and recognize wild species • Establish and manage wildlife conservation areas • Carry out conservation of endangered and endemic species • Collect and record wildlife resource data • Utilize Consumptive and Non-Consumptive Wildlife • Establish and manage wild animal farming	65

AGR NRC2 08 0322	Apply Agricultural Extension service for Rural development	AGR NRC2 M08 0422	Applying Agricultural Extension service for Rural development	• Promote the use of digital technology in Agricultural Extension • Understand Adult Learning • Integrate Gender in Agricultural Extension • Recognize Indigenous Knowledge	36
AGR NRC2 09 0322	Prevent and Eliminate MUDA	AGR NRC2 M09 0422	Preventing and Eliminating MUDA	• Prepare for work • Identify MUDA and problem • Analyze the causes of a problem • Eliminate MUDA and assess the effectiveness of the solution • Prevent the occurrence of wastes and sustain the operation	40

*The time duration (Hours) indicated for the module should include all activities in and out of the TVET institution.

1.10   Institutional Assessment

Two types of evaluation will be used in determining the extent to which training outcomes are achieved. The specific training 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 training modules and form part of the training process. Formative evaluation provides the trainee with feedback regarding success or failure in attaining training outcomes. It identifies the specific training 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 of institutional Assessment implementation guidelines..

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 **BSc Level** and above who have satisfactory practical experiences or equivalent qualifications.

LEARNING MODULE 01
TVET-PROGRAMME TITLE: **Natural Resource Conservation and Development Level II**
MODULE TITLE: **Conducting Erosion and Sediment Control Activities**
MODULE CODE: **AGR NRC2 M01 0422**
NOMINAL DURATION: .70. Hours
MODULE DESCRIPTION : This module covers the process of carrying out erosion and sediment control activities in both urban and rural environments. It requires the ability to identify erosion and sediment control structures, carry out routine work in compliance with control measures. Undertake work following legislation and community expectation and project specifications
LEARNING OUTCOMES   At the end of the module the trainee will be able to: **LO1.** Align worksite practices with erosion and sediment control principles   **LO2.** Implement erosion and sediment control measures   **LO3**. Finalize erosion and sediment control work

MODULE CONTENTS:
 	
 LO1. Align worksite practices with erosion and sediment control principles
 	
     1.1 Processes of erosion and sedimentation
 	
     1.2 Identifying Erosion types and causes of erosion
 	
     1.3 Impacts of erosion and sedimentation on the environment
 	
     1.4 Erosion and sedimentation legislation
 	
     1.5 Erosion and sediment control procedures
 	
 LO2. Implement erosion and sediment control measures
 	
     2.1 Erosion and sediment control measures
 	
     2.2 Applying Industry practices for erosion and sediment control
 	
 LO3. **Finalize erosion and sediment control work**
 	
     3.1 Cleaning and checking all equipment and materials
 	
     3.2 Recording and documenting all assessment and measurements
 	
     3.3 Reporting the use of resources

LEARNING METHODS: • Lecture and Discussion   • Demonstration

- Simulation
- Role playing

ASSESSMENT METHODS:

- Written test
- Oral question
- Practical demonstration

ASSESSMENT CRITERIA:

LO1. Align worksite practices with erosion and sediment control principles

- Erosion types and causes of erosion are identified according to guideline
- Erosion and sedimentation legislation have adhered to the worksite as a part of contract works
- Procedures relating to erosion and sediment control are applied on the worksite to align with industry standards

LO2. Implement erosion and sediment control measures

- Erosion and sediment control measures are implemented.
- Industry practices for erosion and sediment control are applied in the workplace.

LO3. Finalize erosion and sediment control work

- All equipment and materials are checked, cleaned, and stored appropriately
- All assessments & measurements are recorded, documented, and reported following industry requirement
- The use of resources is documented to industry requirements

Resource Requirements

AGR NRC2 M01 0422 Conducting Erosion and Sediment Control Activities				
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	TTLM	Prepared by the trainer	25	1:1
2.	Reference Books			
2.1	Soil Erosion and Conservation	Morgan RPC. 2005. 3rd ed. Wiley Blackwell	5	1:5
2.2	Soil and Water Conservation for Sustainable Agriculture	Taffa T. 2002. Mega Publishing	5	1:5
3.	Journals/Publication/Magazines			1:5
3.1	Community-based Participatory Watershed and Rangeland Development Guideline	MoA. 2020. Community Based Participatory Watershed and Rangeland Development: A Guideline. Ministry of Agriculture, Addis Ababa, Ethiopia		1:5
B.	*Learning Facilities & Infrastructure*			
1.	Library	5m x6m	1	1:25
2.	Laboratory Equipped with Audiovisual	5m x 8m	5	1:25
3.	Lecture Room	5m x 8m	1	1:25
4	Demonstration Site/Field	4m x 10m	1	1:25
C.	*Consumable Materials*			
1	Stationary	Standard	5	1:5
2	A4 Paper	Pack	5	1:5

3	Fixer	Standard	25	1:1
4	Pen	Standard	25	1:1
5	pencil	HB	25	1:1
6	Marker	Standard	25	1:1
7	Printer ink	Standard	5	1:5
8	Whiteboard	Magnetic	1	1:25
9	Notice board	900 mm x 600 mm Heavy duty wooden	1	1:25
10	Armchairs and/or chairs with tables	Standard	25	1:1
11	Flip chart	Sinar line	1	1:25
D.	*Tools and Equipments*			
1.	Boots	Standard	No	1:1
2	Overall	Khaki	25	1:1
3	Glove	Leather	25	1:1
4	Respiratory equipment	TS 5310V N95 respiratory protection dust mask	25	1:1
5	Gabion	2m x 1m x1m, 1.5m x1m x 1m	Each 5	1:5
7	Pickaxe	Razor-Back 5-Pound Pick Mattock	5	1:5
8	Rake	14 forged teeth, 3.5-inch teeth, wood handle	5	1:5
9	Hoe	Stainless steel	5	1:5
10	GPS	Garmin 72	5	1:5
11	Meter Tape	5 m, 10 m, 20 m, 50 m, and 100 m	Each 5	1:5
12	Water level	Standard	5	1:5
13	Rope (200m)	Round durable, plastic rope	5	1:5
14	Shovel	Bully Tools 92712 14-gauge round point	5	1:5
15	Ranging pole	Steel telescopic ranging pole	5	1:5
16	Pegs	Metallic	100	5:1

LEARNING MODULE 02
TVET-PROGRAMME TITLE: **Natural Resource Conservation and Development Level II**
MODULE TITLE: **Applying In-Situ Moisture Harvesting Technologies**
MODULE CODE **AGR NRC2 M02 0422**
NOMINAL DURATION 50 Hours
MODULE DESCRIPTION: This module covers the competence required to   designing, constructing and maintaining appropriate In-situ moisture harvesting technologies, micro catchments, macro catchments and flood water harvesting structures.
LEARNING OUTCOMES   At the end of the module the trainee will be able to: **LO1. Prepare for work**   **LO2. Plan design requirements**   **LO3. Identify benefits and limitations of in-situ moisture harvesting technologies**   **LO4. Design and implement in-situ moisture harvesting technologies**   **LO5. Manage and maintain in-situ moisture harvesting technologies**   **LO6. Finalize work and report**

MODULE CONTENTS:
 	
 LO1. Prepare for work
 	
     1.1. Identifying in-situ moisture harvesting technologies
 	
     1.2. Ecological and socio-economic factors
 	
     1.3. Tools and equipment
 	
 LO2. Plan design requirements
 	
     1.4. Determining cost elements and work norm
 	
     1.5. Planning technical design requirements
 	
     1.6. Determine period of implementation across seasons
 	
 LO3. Identify benefits and limitations of in-situ moisture harvesting technologies
 	
     3.1. Benefits of in-situ moisture harvesting technologies
 	
     3.2. Limitations of in-situ moisture harvesting technologies
 	
 LO4. **Design and implement in-situ moisture harvesting technologies**
 	
     4.1. Selecting in situ moisture harvesting technologies
 	
     4.2. Designing in-situ moisture harvesting technologies

4.3. Layout and construction procedure

4.4. Constructing in situ moisture harvesting technologies

LO5. Manage and maintain in-situ moisture harvesting technologies

5.1. Managing in-situ moisture harvesting technologies

5.2. Maintaining in-situ moisture harvesting technologies

LO6. Finalize work and report

6.1. Clean, maintain and store tools and equipment

6.2. Identify and report layout and implementation faults and/or corrective actions

6.3. Document and report problems and work outcomes

LEARNING METHODS:

- Lecture and Discussion
- Démonstration
- Simulation
- Practical exercises
- Role-plays

ASSESSMENT METHODS:

- Written test on required knowledge
- Practical assessment
- demonstration with oral questioning

ASSESSMENT CRITERIA:

LO1. Prepare for work

- Different *in-situ moisture harvesting technologies* are identified
- Ecological and socio-economic factors required for in situ moisture harvesting technologies are assessed
- *Tools and equipment* necessary for in-situ moisture harvesting technologies are identified and prepared

LO2. Plan design requirements

- Cost elements and work norm are determined in accordance with the new watershed guideline
- Technical design requirements are planned in accordance with the new watershed guideline specifications
- Period of implementation across seasons are determined based on standard operating procedures

LO3. Identify benefits and limitations of in-situ moisture harvesting technologies

- Benefits of in-situ moisture harvesting technologies are identified according to the guideline
- Limitations of in-situ moisture harvesting technologies are identified according to the guideline

LO4. Design and implement in-situ moisture harvesting technologies

- Appropriate in situ moisture harvesting technologies are selected in accordance with standard specification
- In-situ moisture harvesting technologies are designed with relation to organizational guideline
- The designed in situ moisture harvesting technologies are constructed

LO5. Manage and maintain in-situ moisture harvesting technologies

- Implemented in-situ moisture harvesting technologies are managed in accordance with the organizational standard
- Implemented in-situ moisture harvesting technologies are maintained in accordance with the organizational standard

LO6. Finalize work and report

- Tools and equipment are cleaned, maintained and stored according to enterprise work procedures.
- Layout and implementation faults are identified and reported to supervisor and/or corrective actions taken.
- Problems or difficulties or hazards information in completing work to required standards or timelines are reported to appropriate personnel.
- Work outcomes are documented and reported according to organizational guideline

Annex: 2 Resource Requirements

Item No.	Category/Item	Description/ Specifications	Quantity	Recommended Ratio (Item: Trainee)
AGR NRC2 M02 0422 Applying In-Situ Moisture Harvesting Technologies			
A.	*Learning Materials*			
1.	TTLM	TTTLM prepared by the trainer		
2.	Reference Books			
3.1				
3.2				
4.	Journals/Publication/Magazines			
4.1.	Rainwater harvesting technology practices and implication of climate change characteristics in Eastern Ethiopia, Cogent Food & Agriculture, 6:1, 1724354	Tasisa Temesge Tolossa, Firew Bekele Abebe & Anteneh Abebe Girma	(2020),	5pc	1:5
4.2.	Community based participatory watershed and Rangeland Development guidline		5pc	1:5
4.3.	Integrated Soil Fertility Management in Africa: Principles, Practices and Developmental Processes	Netranya S, Woomer PL, eds. 2009. Tropical Soil Biology and Fertility Institute of the International Centre for Tropical Agriculture.		
4.4	Soil and Water Conservation for Sustainable			

	Agriculture			
B.	**Learning Facilities & Infrastructure**			
1.	Lecture room	1.2*25		
2	Library	105 – 180 m2 area Needed Per Trainee	1	1:25
3	Visual training Media	LCD, Laptops	1 Pcs	1:25
4	Teaching boards	White board ,Flip chart ,Smart board	1 Pcs	1:25
5	Arm chair	55 Cm *74 Cm *100Cm	25 Pcs	1:1
6	Notice board	120*100 Cm	1 Pcs	1:25
7	White board	240 Cm *120 Cm	1 Pcs	1:25
8	Laboratory equipped with audiovisual	$15m x 10m = 150m^2$	1	1:25
9	Demonstration site/field	$20m x 50m = 1000m^2$	1 plot	1:25
C.	**Consumable Materials**			
1.	Tracing paper	50cmx75cm	1pad	1:25
2	Papers	4A	25pc	1:1
3	Pencil	Wood yellow HB pencil with eraser 7.5 inch	1 packet	1:25
5	Note pad	Number Of Pages- 50 Fine Paper Quality Paper Thickness 0.1-0.4 mm	25	1:1
6	Fixer		1 packet/coil	1:25
7	Marker	Permanent	1packet	1:25
8	Graph paper	50cmx75cm	1	1:25
9	Printer ink	HP Laser jet 26A/82A	1pc	
D.	**Tools and Equipments**			
1.	Water level	Mini string bubble level		1:3
2	Meter tape	30, 50m and100m	5pc	1:5
3	Hammers	27mm head with 35cm handle	1pc	1:5
4	Shovels	Strong, durable & Round Point	5pc	1:5

5	Rope	Nylon	1 coil	1:5
6	Pick axes	Chisel point pattern. Hardened and tempered	5pc	1:5
7	Pegs	Wooden, metallic 50 cm	25pc	1:1
8	Ranging pole	Wooden, plastic, fibrous aluminum 2m long	25pc	1:1

LEARNING MODULE 03
TVET-PROGRAMME TITLE: **Natural Resources Conservation and Development Level II**
MODULE TITLE: **Rehabilitating and Restoring Degraded Areas**
MODULE CODE: **AGR NRC2 M03 0422**
NOMINAL DURATION: 38 hours
MODULE DESCRIPTION: This module covers knowledge, skills and attitude required to demarcate and Implement of rehabilitation and restoration of degraded areas.
LEARNING OUTCOMES
At the end of the module the trainee will be able to:
LO1. Prepare for rehabilitation of degraded area
LO2. Demarcate area to be rehabilitated
LO3. Document and report information
LO4. Implement rehabilitation and restoration activities
MODULE CONTENTS:
LO1. Prepare for rehabilitation of degraded area

LO1. Prepare for rehabilitation of degraded area

   1.1. Gathering baseline information

   1.2. OHS hazards

      1.2.1 Identifying OHS hazards

      1.2.2 Assessing and reporting risks

   1.3. Rehabilitation and restoration works

      1.2.3 Environmental implications of rehabilitation and restoration works

      1.2.4 Assessing and reporting outcomes

   1.4. Tools, equipment and machinery

   1.5. Carrying out Pre-operational and safety checks

   1.6. Select, use and maintain suitable PPE

LO2. Demarcate area to be rehabilitated

   2.1. OHS procedures, practices, policies and precautions

   2.2. Assessing soil and existing vegetation

   2.3. Conducting area demarcation and closing site

LO3. Implement rehabilitation and restoration activities

   3.1. Analyze sample soil for seed bank

3.2. Identifying existing species

3.3. Selecting Potential species

3.4. Best type and species of trees for afforestation

3.5. Enhancing community participation

3.6. Rehabilitation and restoration techniques

LO4. **Document and Report information**

4.1. Reporting Problems or difficulties or hazards

4.2. Recording and Documenting all rehabilitation and restoration activities

4.3. Documenting and Reporting work outcomes

LEARNING METHODS:

- Lecture and Discussion
- Démonstration
- Simulation
- Role playing

ASSESSMENT METHODS:

- Written Test
- Interview
- Practical demonstration with Oral questioning
- Project Assignment

ASSESSMENT CRITERIA:

LO1. Prepare for rehabilitation of degraded area

- Baseline information is gathered using site rehabilitation and restoration plans and in consultation with the local community

- OHS hazards are identified, risks assessed and reported to appropriate personnel in standard format

- The environmental implications of rehabilitation and restoration works are identified and the likely outcomes assessed and reported according to organizational guideline

- Natural area restoration tools, equipment and machinery are selected and prepared for use according to procedures and plant species to be established

- Pre-operational and safety checks are carried out on tools, equipment and machinery according to manufacturers specifications and enterprise work procedures

- Suitable safety and PPE are selected, used and maintained

LO2. Demarcate area to be rehabilitated

- Organizational OHS procedures, practices, policies, and precautions are observed and followed

- Soil and existing vegetation are assessed according to sampling procedures

- Area demarcation activity is conducted and the site is closed based on the site demarcation procedure and a map is developed

LO3. Implement rehabilitation and restoration activities

- Sample soil is analyzed for seed bank according to sample test procedures.

- Existing species are identified to restore the degraded area according to soil seed bank test result

- Potential species are selected to enrich the degraded area according to the existing indicator species.

- Best type and species of trees for afforestation purpose of degraded land are planned to improve water absorption and permeability characteristics of the soil.

- Community participation is enhanced to implement the rehabilitation activity on a sustainable basis according to the work plan.

- Rehabilitation activity progress is followed up and evaluated for any amendment

according to the organizational procedures

LO4. Document and report information

- Problems or difficulties or hazards information in completing work to required standards or timelines are reported to appropriate personnel.

- All rehabilitation and restoration activities are recorded and documented on daily basis in standard organizational formats

- Work outcomes are documented and reported according to organizational guideline

	AGR NRC2 M03 0422: **Rehabilitating and Restoring Degraded Areas**			
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	TTLM	Prepared by the trainer		1:1
2.	Reference Books			
2.1	Integrated Management of Land Scape Trees, Shrubs and Vines.	Richard W. Harris, James R. Clark, and Nelda P. Mathew.2004. 4thed.	5	1:5
2.2	Soil and water conservation	Tafa Tulu, 2003	5	1:5
2.3	Conservation of faunal diversity in forested landscapes	R. M. De Graaf R. I. Miller	5	1:5
3.	Journals/Publication/Magazines			1:5
B.	*Learning Facilities & Infrastructure*			
1.	Lecture room	1.2*25	1	1:25
2	Library	105 – 180 m2 area Needed Per Trainee	1	1:25
3	Visual training Media	LCD, Laptops	1 Pcs	1:25
4	Teaching boards	White board ,Flip chart ,Smart board	1 Pcs	1:25
5	Arm chair	55 Cm *74 Cm *100Cm	25 Pcs	1:1
6	Notice board	120*100 Cm	1 Pcs	1:25
7	White board	240 Cm *120 Cm	1 Pcs	1:25
8	Laboratory equipped with audiovisual	15mx10m=150m^2	1	1:25
9	Demonstration site/field	20mx50m=1000m^2	1 plot	1:25
5.	Seed bank room	4mx5m cold rooms	1pc	1:25
C.	**Consumable Materials**			

1.	Stationary (Papers, pens, pencils, fixer, marker)	Full package	25	1:1
2.	Printer ink	HP Laser jet 26A/82A	1pc	1:25
3.	Seedlings	25cm-30cm	125	5:1
	PPE			
4.	Overall clothes	Cotton clothes	25pc	1:1
5.	Helmet	Hard fiber	25pc	1:1
6.	Shoes	Safe and hard	25pc	1:1
7.	Gloves	Leather and /or rubber	25 pair	1:1
D.	**Tools and Equipments**			
1.	Wheelbarrow	Length: 144cm, Width: 58cm, Depth: 56cm weight: 11 kg Capacity: 120 kg	5	1:5
2.	Shovels	Strong, durable & Round Point	5pc	1:5
3.	Crow bars	1 inch thick metal	5pc	1:5
4.	Rakes	steel construction with 16 flat teeth and a long tubular steel handle	5	1:5
5.	Hoe	Chillington Crocodile H4 handle - standard length 47 inch	5	1:5
6.	Brooms	12" bass / hard bristle pathway brush c/w handle	No	1:5
7.	Sanding blocks	125L x 100W x 12Th (mm)	1pc	1:25
8.	String lines	Nylon	1coil	1:25
9.	Meter	30m, 50m &/or 100m	1 pc	1:25
10.	Marking gauges	Wooden/metallic 50cmL	25	1:1
12.	Peg	Wooden/metallic 50cmL	25	1:1
14.	Clinometers	Suunto PM5	5pc	1:5
15.	GPS	Garmin 60, 64, 72 if any	5pc	1:5
16.	Hammers	27mm head with 35cm handle	1pc	1:5
17.	Water can	Pvc/fibrous	5pc	1:1

LEARNING MODULE 04
TVET-PROGRAMME TITLE: **Natural Resources Conservation and Development Level II**
MODULE TITLE: **Operating and Maintaining Irrigation works and Drainage Systems**
MODULE CODE: **AGR NRC2 M04 0322**
NOMINAL DURATION: 70 Hours
MODULE DESCRIPTION: This module covers the knowledge, skills, and attitude required to operate and maintain micro-irrigation and drainage systems. It requires the ability to organize equipment for installation work, set out and prepare site, and communicate with work team members.
LEARNING OUTCOMES At the end of the module the trainee will be able to: **LO1. Prepare tools and materials for installation work** **LO2. Set out and prepare the site** **LO3. Install irrigation components** **LO4. Maintain drainage systems** **LO5. Lower and position pipes & clean up** **LO6. Finalize work and report**
MODULE CONTENTS: **LO1. Prepare tools and materials for installation work** 1.1. Identifying and selecting materials, *tools, equipment, and machinery* 1.2. Checking *the water* supply 1.3. Checking parts and *equipment* delivered to the site **LO2. Set out and prepare the site** 2.1. Determine crop water requirement 2.2. Soil moisture measurement 2.3. Soil water retention testing techniques 2.4. Carryout pre-operational and safety checks on tools, equipment, and machinery 2.5. Undertaking measurement and marking out of irrigation lines 2.6. Confirming equipment operation and work practices **LO3. Install irrigation components** 3.1. Undertake installation work 3.2. Micro-irrigation system

      1.2.1. Methods and techniques of micro irrigation

      1.2.2. Micro-irrigation system components

      1.2.3. Identifying the site for installation of the micro-irrigation system

      1.2.4. Enterprise work procedure

3.3. Assembling and connecting components

3.4. Completing and testing joints

1.4. Adjusting power requirement for suction and delivery head

1.5. Carryout the irrigation system after pumping

3.5. Maintaining *a clean and safe work area*

3.6. Restoring the site and removing and disposing of *waste material*

LO4. Lower and position pipes & clean up

4.1. Laying and consolidating bedding materials

4.2. Installing/ lowering pipes into position with appropriate mechanical equipment

4.3. Installing pipe joints and fittings

4.4.Backfill pipes and cover the left level

4.5.Clearing the site and excess soil, debris, and removing unwanted materials

LO5. Maintain drainage systems

5.1. Preparing tools and equipment used to maintain drainage system

5.2. Checking drainage systems for defects

5.3. Maintaining drainage systems

6.4. Documenting and reporting work outcomes

LO6. Finalize work and report

6.1. Cleaning, maintaining, and storing tools, equipment, and machinery

6.2. Identifying and reporting operating faults

6.3. Reporting problems or difficulties or hazards

6.4. Documenting and reporting work outcomes

LEARNING METHODS:

- Lecture and Discussion
- Démonstration
- Simulation
- Role playing

ASSESSMENT METHODS:

ASSESSMENT CRITERIA:

LO1. Prepare tools and materials for installation work

- Materials, tools, equipment, and machinery are identified and selected according to irrigation design requirements and the supervisor's instructions.

- The site for installation of the micro-irrigation system is identified according to the site and irrigation system plans and enterprise work procedures.

- Power requirement for suction and delivery head is adjusted using the standard technique as directed by the supervisor.

- The irrigation system after pumping is carried out based on local topographic conditions as directed by the supervisor.

- Parts and equipment delivered to the site are checked according to system drawings and specifications.

- The water supply is checked to ensure that it is compatible with system specifications.

LO2. Set out and prepare the site

- Pre-operational and safety checks are carried out on tools, equipment, and machinery according to the manufacturer's specifications and enterprise work procedures.

- Measurement and marking out of irrigation lines are undertaken as directed by the supervisor.

- Equipment operation and work practices are confirmed to enterprise and legislative OHS requirements.

LO3. Install irrigation components

- Work is undertaken according to plan and supervisor's instructions

- Components are assembled and connected according to plan, joints are completed and tested as directed by the supervisor.

- A clean and safe work area is maintained while installation work is carried out.

- The site is restored and waste material is removed from the site and disposed of in an environmentally aware and safe manner according to enterprise work procedures.

LO4. Maintain drainage systems

- Tools and equipment used to maintain drainage system is prepared

- Drainage systems are checked to ensure there are no defects according to organizational

standards

- Drainage systems are maintained according to inspected defects
- Work outcomes are documented and reported according to organizational guideline

LO5. Lower and position pipes & clean up

- Bedding materials are laid and consolidated to specified depths and grades.
- Pipes are installed/ lowered into position with appropriate mechanical equipment according to specifications.
- Pipe joints and fittings are installed to the job specification.
- Pipes are backfilled to specifications and cover the left level with the surrounding ground.
- The site is cleared and excess soil, debris, and unwanted materials removed following organizational procedures and environmental requirements.

LO6. Finalize work and report

- Tools, equipment, and machinery are cleaned, maintained, and stored according to enterprise work procedures.
- Operating faults are identified and reported to the supervisor and/or corrective actions taken.
- Problems or difficulties or hazards information in completing work to required standards or timelines are reported to appropriate personnel.
- Work outcomes are documented and reported according to organizational guideline

Annex: Resource Requirements

Item No.	Category/Item	Description/ Specifications	Quantity	Recommended Ratio (Item: Trainee)
AGR NRC1 M04 0422: **Operating and Maintaining irrigation and Drainage Systems**				
A.	**Learning Materials**			
1.	TTLM	Prepared by the trainer	25	1:1
2.	Reference Books			
2.1	Irrigation Engineering and hydraulic structures	Santos Kumar GARG, 2005	5	1:5
2.2	Irrigation Systems Management	Dean E. Eisenhauer, Derrel L. Martin, Derek M, Glenn J. Hoffman, 2021	5	1:5
2.3				
3.	Journals/Publication/Magazines			1:5
B.	**Learning Facilities & Infrastructure**			
1.	Lecture Room	5m*8m	40m^2	1:25
2.	Library	5m*6m	30m^2	1:25
3.	Laboratory equipped with audiovisual	5m*8m	40m^2	1:25
4	Demonstration site/field	4 m x 10 m	40m^2	1:25
C.	**Consumable Materials**			
1.	Stationary (Papers, pens, pencils, fixer, marker)	Standard	25 each type	1:1
2.	Printer ink	Standard	5	1:25
D.	**Tools and Equipments**			
1.	Automatic level	Standard	5	1:5

2.	Laser level	Standard	5	1:5
3.	Dumpy level	Standard	1	1:25
4.	Staff	Standard	5	1:5
5.	Boning rods	Standard	1	1:25
6.	Rollers	Standard	1	1:25
7.	Hoses	10 mm diameter and 100 m in length	1	1:25
8.	Ditch witches	Standard	1	1:25
9.	Pumps and pump fittings	Standard	1	1:25
10.	Backhoes	Standard	1	1:25
11.	Front-end loaders	Standard	1	1:25
12.	Graders	Standard	1	1:25
13.	Mechanical rollers	Standard	1	1:25
14.	Trucks	Standard	1	1:25
15.	Hydraulic trailers	Standard	1	1:25
16.	Tractors	Standard	1	1:25
17.	Wheelbarrow	90 L/120 kg 5	5	1:5
18.	Spades	Extra long carbon steel	13	1:2
19.	Shovels	Bully Tools 92712 14-gauge round point	13	1:2
20.	Crow bars	Standard	1	1:5
21.	Rakes	14 forged teeth, 3.5-inch teeth, wood handle	5	1:5
22.	Hoe	Stainless steel	13	1:2
23.	Brooms	Standard	5	1:5
24.	Sanding blocks	Standard	5	1:5

25.	Chain saw	Ryobi 14 in. 37cc 2-Cycle Gas	5	1:5
26.	Leveling equipment	Standard	5	1:5
27.	String lines	Standard	5 Roll	1:5
28.	Tape measures	5-100m	5	1:5
29.	Marking gauges	Standard	5	1:5
30.	Printer	Standard	1	1:25
31.	Peg	Tent pegs, metallic	125	5:1
32.	Clinometers	Standard	5	1:5
33.	GPS	Garmin	5	1:5
34.	Hammer	Hammer with metal arm	13	13:25
35.	Emitters	Standard	No	
36.	Main and lateral lines	Standard	M	
37.	Nozzles	Standard	No	
38.	Water can	Chillington Canterbury Fork	13	1:2
39.	Filter	Standard	1 or 2	1:25 or 2:25
40.	Valve	Standard	No	
41.	Take-off valves	Standard	No	
42.	Gromate	Standard	No	
43.	Stop-watch	RS PRO stainless steel analog	5	1:5
44.	PH meter	Automatic switch off after 3 min	13	1:2
45.	Water tank /pump	Automatic switch off after 3 minutes 10 1	5	1:5
46.	Oven dry	Capacity 400 L and minimum 4 shelves, temperature control	2	2:25

47.	Safety clothes	100% Cotton, Polo 65%/ 35% Cotton, Fire Retardant	25	1:1
48.	Soil core sampler	The sampler is supplied with two wedge coring tips, driving	5	1:5
49.	Siphon	20/different diameter	25	1:1
50.	Goggles Plastic	Plastic	25	1:1
51.	Mask	Crew mas	25	1:1
52.	Overalls	Khaki	25	1:1
53.	First aid kits	Gym first aid kit	5	1:5
54.	Gloves	Leather gloves	25	1:1
55.	Safety shoes	Steel-toe boots	25	1:1
56.	Safety hat	3M hard hat safety helmet	25	1:1
57.	LCD projector	Sony	1	1:25
58.	Ladders	Louisville Ladder FS1508	5	1:5
59.	Weather station	Standard	1	1:25
60.	Double-ring infiltrometer	Consist of two cylindrical buckets with the diameter of 30cm and 60cm	5	1:5

LEARNING MODULE 05
TVET-PROGRAMME TITLE: **Natural Resources Conservation and Development Level II**
MODULE TITLE: **Conducting Agroforestry Practices**
MODULE CODE: **AGR NRC2 M05 0422**
NOMINAL DURATION: 50 hours
MODULE DESCRIPTION: This module covers the knowledge, skills, and attitude required to apply Agroforestry techniques and practices to promote Agroforestry to the community.
LEARNING OUTCOMES At the end of the module the trainee will be able to: **LO1. Classify the Agroforestry systems** **LO2. Identify Agroforestry species** **LO3. Characterize traditional agroforestry potentials** **LO4. Apply Agro-Forestry technology for soil productivity and protection** **LO5. Identify and manage component inter-action in agroforestry system** **LO6. Record and report information**
MODULE CONTENTS: **LO1. Classify the Agroforestry systems** 1.1. Agroforestry systems   1.1.1 Classification of agroforestry systems   1.1.2 Components of agroforestry system   1.1.3 Benefits of agroforestry   **LO2. Identify Agroforestry species** 2.1 Agro-forestry species 2.2 Matching species with site **LO3. Characterize traditional agroforestry potentials** 3.1 Characterizing Agroforestry potentials **LO4. Apply Agro-Forestry technology for soil productivity and protection** 4.1 Promoting different Agroforestry practices 4.2 Identifying Agroforestry technologies 4.3 Practicing Agroforestry technologies **LO5. Identify and manage component inter-action in agroforestry system**

5.1 Interactions of Agroforestry components

5.2 Managing Component interactions

LO6. Record and report information

6.1 Assessing all activities

6.2 Documenting and reporting agroforestry component interaction

6.3 Reporting problems or difficulties or hazards information

6.4 Documenting and reporting work outcomes

LEARNING METHODS:

- Lecture and Discussion
- Démonstration
- Simulation
- Role playing

ASSESSMENT METHODS:

- Written Test
- Practical demonstration with Oral questioning
- Project Assignment

ASSESSMENT CRITERIA:

LO1. Classify the Agroforestry systems

- Agroforestry systems are identified based on the presence of components

- Agroforestry systems are identified depending on their benefits

- Agroforestry systems are identified depending on the arrangements of components

LO2. Identify Agroforestry species

- Agro-forestry species are identified based on growth character and potential productivity

- Identified species are matched with site based on species requirement and environmental condition

LO3. Characterize traditional agroforestry potentials

- Agroforestry potentials are characterized based on edaphic and climatic factors
- Agroforestry potentials are characterized based on farming practice

LO4. Apply Agro-Forestry technology for soil productivity and protection

- Different Agroforestry practices are identified and promoted.

- Agroforestry technologies are identified based on their ecological and socio-economic importance

- Agroforestry technologies are practiced for soil productivity and protection.

LO5. Identify and manage component inter-action in agroforestry system

- Agroforestry components of positive and negative interactions are identified

- Component interactions are managed

LO6: Record and report information

- All activities are assessed for any changes

- Agroforestry component interaction management activities are documented and reported

- Problems or difficulties or hazards information in completing work to required standards or timelines are reported to appropriate personnel.

- Work outcomes are documented and reported according to organizational guideline

Annex: 2 Resource Requirements

AGR NRC2 M05 0422: Rehabilitating and Restoring Degraded Areas				
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	TTLM	Prepared by the trainer	25	1:1
2.	Reference Books			
2.1				1:5
2.2				1:5
3.	Journals/Publication/Magazines			1:5
B.	*Learning Facilities & Infrastructure*			
1.	Lecture room	1.2*25=30m^2	1	1:25
2	Library	105 – 180 m2 area Needed Per Trainee	1	1:25
3	Visual training Media	LCD, Laptops	1	1:25
4	Teaching boards	White board ,Flip chart ,Smart board	1	1:25
5	Arm chair	55 Cm *74 Cm *100Cm	25	1:1
6	White board	240 Cm *120 Cm	1	1:25
7	Laboratory equipped with audiovisual	15mx10m=150m^2	1	1:25
8	Demonstration site/field	20mx50m=1000m^2	1	1:25
9	Seed bank room	8mx8m=64m^2	1	1:25
C.	**Consumable Materials**			
1.	Stationary (Papers, pens, pencils, fixer, marker)	Full package	25	1:1
2.	Printer ink	HP Laser jet 26A/82A	1	1:25

3.	Seedlings	25-30cm	125	5:1
	PPE			
4.	Overall clothes	Cotton made	25	1:1
5.	Helmet	Rubber	25	1:1
6.	Shoes	High quality and safety	25	1:1
7.	Gloves	Rubber, leather	25	1:1
D.	*Tools and Equipments*			
1.	Wheelbarrow	Length: 144cm, Width: 58cm, Depth: 56cm weight: 11 kg Capacity: 120 kg	5	1:5
2.	Shovels	Strong, durable & Round Point	5	1:5
3.	Crow bars	Standard		1:5
4.	Rakes	steel construction with 16 flat teeth and a long tubular steel handle	5	1:5
5.	Hoe	Chillington Crocodile H4 handle - standard length 47 inch	5	1:5
6.	Brooms	Standard		1:5
7.	Sanding blocks	Standard		1:5
8.	Leveling equipment	Mini string bubble level	25	1:3
9	String lines	Nylon	5	1:5
10.	Meter	30,50,100 m	5	1:5
11.	Marking gauges	Standard		1:5
12.	Printer	HP laser jet 26A/82A	1	1:5
13.	Peg	Wooden/metallic	25	1:1
14.	Clinometers	Suunto PM5	5	1:5
15.	GPS	Garmin 60, 64, 72 if any	5	1:5
16.	Hammer	27mm head with 35cm handle	1	1:5
17.	Water can	Fibrous/PVC	5	1:5

LEARNING MODULE 06
TVET-PROGRAMME TITLE: **Natural Resource Conservation and Development Level II**
MODULE TITLE: **Applying Forest Protection Strategies and Practices**
MODULE CODE: **AGR NRC2 M06 0422**
NOMINAL DURATION: .60. Hours
MODULE DESCRIPTION : This module covers the knowledge, skills, and attitude required to apply the preventive and controlling mechanism to detect, protect and control forest pests, diseases, invasive species, and forest fires
LEARNING OUTCOMES   At the end of the module the trainee will be able to: **LO1. Apply disease and pest preventive and/or control mechanism**   **LO2. Implement prevention and controlling program of invasive species**   **LO3. Implement fire prevention and controlling program**   **LO4. Record and report information**

MODULE CONTENTS:
 LO1. Apply disease and pest preventive and/or control mechanism
     1.1 Conducting Disease and pest surveillance
     1.2 Assessment of disease and pest
     1.3 Identifying major diseases and pests
     1.4 Identifying pests and disease preventive techniques
     1.5 Applying pests and disease control mechanisms
 LO2. Implement prevention and controlling program of invasive species
     2.3 Designing quarantine procedures
     2.4 Applying Guidelines prepared by appropriate personnel
     2.5 Supporting and conducting Community awareness creation
     2.6 Materials and facilities for quarantine
     2.7 Gathering Baseline information that helps in invasive prevention and control
     2.8 Identifying Invasive species based on international guidelines
     2.9 Apply control mechanisms for further expansion of invasive species
     2.10   Conducting assessment to the prevention and monitoring principles
 LO3. **Implement fire prevention and controlling program**

3.1 OHS, legislative and organizational requirements

3.2 Identifying Smoke and current position in the field

3.3 Locating the current position on map

3.4 Establishing and maintaining communication with others

3.5 Communication equipment and safe working practice

3.6 Location of own position and sightings

3.7 Recording Sighting details

3.8 Identifying situations requiring specialist advice

LO4. R**ecord and report information**

4.1 Recording, documenting and reporting disease and pest assessment result

4.2 Recording and relaying relevant information and conditions

4.3 Recording and reporting fire detecting processes and outcomes

LEARNING METHODS:

- Lecture and Discussion

- Démonstration

- Simulation

- Role playing

ASSESSMENT METHODS:

- Written test

- Oral question

- Practical demonstration

ASSESSMENT CRITERIA:

LO1. Apply disease and pest preventive and/or control mechanism

- Disease and pest surveillance is conducted according to disease and pest control work procedures and supervisor instruction.
- Assessment of disease and pest is conducted according to the assessment procedures
- Important diseases and pests are identified according to disease and pest control work procedures.
- Preventive techniques are identified to protect pest and disease occurrence in the forest according to forest pest and disease prevention guidelines
- Control mechanisms are applied to control pests and disease in the forest according to forest pest and disease control guidelines and as directed by the supervisor

LO2. Implement prevention and controlling program of invasive species

- Quarantine procedures are designed to be followed during the introduction of new species
- Guidelines prepared by appropriate personnel are applied to conduct quarantine for specific species according to the quarantine procedures
- Community awareness creation is supported and conducted as directed by the supervisor
- Necessary materials and facilities are prepared to conduct the quarantine based on the requirements.
- Baseline information that helps in invasive prevention and control is gathered according to invasive control procedures
- Invasive species are identified following the international guidelines and as directed by the supervisor
- Controlling mechanisms are applied to prevent their further expansion according to working documents
- Assessment is conducted according to the prevention and monitoring principles as directed by the supervisor.

LO3. Implement fire prevention and controlling program

- Applicable OHS, legislative and organizational requirements, certification, and environmental requirements relevant to detecting fires are identified and complied

- Smoke and current position in the field are identified using landmarks and key geographical features
- The current position in the field is located on a map or plan following site procedures
- Communication with others is established and maintained following OHS requirements
- Communication equipment is used to relay information accurately and follow safe working practices, training, and site procedures
- Location of own position and sightings are accurately and relayed to fire command or control using conventional descriptions
- Sighting details are recorded following required formats, conventions, and site procedures
- Situations requiring specialist advice are identified and assistance sought as required following site procedures

LO4. Record and report information

- Disease and pest assessment result is recorded, documented, and reported to appropriate personnel
- Relevant information and conditions are accurately recorded and relayed using required formats and conventions following instructions
- Fire detecting processes and outcomes are recorded and reported to the appropriate personnel

Annex: 2 Resource Requirements

AGR NRC2 M06 0422 **Applying Forest Protection Strategies and Practices**				
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	TTLM	TTTLM prepared by the trainer		1:1
2.	Reference Books			
2.1	Forest Management and Planning	Bettinger P, Boston K, Siry J, Grebner D. 2008. Academic Press		1:5
3.	Journals/Publication/Magazines			1:5
B.	*Learning Facilities & Infrastructure*			
1	Lecture room	1.2*25	1	25
2	Library	105 – 180 m2 area Needed Per Trainee	1	1:25
3	Visual training Media	LCD, Laptops	1	1:25
4	Teaching boards	White board ,Flip chart ,Smart board	1	1:25
5	Arm chair	55 Cm *74 Cm *100Cm	25	1:1
6	Notice board	120*100 Cm	1	1:25
7	White board	240 Cm *120 Cm	1	1:25
8	Laboratory equipped with audiovisual	$15mx10m=150m^2$	1	1:25
C.	*Consumable Materials*			
1	Paper	4A	1	1:1
2	Fixer			1:1
3	pencil	BH	2	1:1
4	Marker	Permanent	1	1:5
5	Printer ink	HP	1	1:25

D.	Tools and Equipments			
1.	Boots	Durable & High quality	25	1:1
2	Overall	High quality	25	1:1
3	Glove	Leather/rubber	25	1:1
4	Respiratory equipment	TS 5310V N95 respiratory protection dust mask	25	1:1
5	Public radio	Standard	1	1:25
6	GPS	Garmin	5	1:5
7	Rope	Nylon	5	1:5
8	Ranging pole	Aluminum	25	1:1
9	Pegs	Steel	125	5:1

LEARNING MODULE 07
TVET-PROGRAMME TITLE: **Natural Resources Conservation and Development Level II**
MODULE TITLE: **Applying Sustainable Wildlife Conservation and Development**
MODULE CODE: **AGR NRC2 M06 0422**
NOMINAL DURATION: 65 Hours
MODULE DESCRIPTION: This module covers the knowledge, skills and attitude required to recognize protected areas and non-protected wildlife management activities, maintain wildlife habitats to conserve endangered, threatened, and endemic species.
LEARNING OUTCOMES At the end of the module the trainee will be able to: **LO.1. Identify and recognize wild species**   **LO.2. Establish and manage wildlife conservation areas**   **LO.3**. **Carry out conservation of endangered and endemic species**   **LO.4**. **Collect and record wildlife resource data**   **LO.5. Utilize Consumptive and Non-Consumptive Wildlife**   **LO.6. Establish and manage wild animal farming**

MODULE CONTENTS:
 	
 LO.1. Identify and Recognize Wild Species
      1.1. Locating and identifying resources and equipment
      1.2. Available processes for wild animals
      1.3. Wild animals behavior and home range
      1.4. Recognizing and naming specified animals with identifiable characteristics
      1.5. Recording and documenting wild animal habits, characteristics and significant features
      1.6. Conducting, handling, transporting, and housing wild animals
 	
 LO.2. Establish and Manage Wildlife Conservation Areas
      .1. Identifying protected areas
      .2. Characteristics of wildlife habitat refugees
      .3. Determining location and boundaries for the wildlife habitat refuge maintenance
      .4. Identifying the time and resources for wildlife habitat maintenance
      .5. Environmental risks and hazards
      .6. Protecting desirable animal species and maintaining habitat refuges

LO.3. Carry out conservation of endangered and endemic species

3.1. Materials tools and PPE

3.2. Identifying and applying conservation systems

3.3. Record data

3.4. Recording location and times of observations

3.5. Follow OHS requirement.

LO.4. Collect and record wildlife resource data

4.1. Specific requirements of the data to be collected

4.2. Wildlife resource data collection methods

4.3. Advice about proposed data collection

4.4. Identifying difficulties of data collection

4.5. Complete legible and accurate records

LO.5. Utilize Consumptive and Non-Consumptive Wildlife

5.1. Ways of consumptive wildlife utilization

5.2. Identifying and using relevant sources of information

5.3. Following OHS requirements

5.4. Identifying and applying rules and regulations

5.5. Implementing needs of customers' wildlife hunting

5.6. Applying ways of non-consumptive wildlife utilization

5.7. Conducting civet musk collection, tourism, and photography

LO.6. Establish and manage wild animal farming

6.1. Identifying and proposing sites

6.2. Preparing materials, tools, and equipment

6.3. Constructing rearing habitats

6.4. Providing feed, water, and shelter to wild animal

6.5. Harvesting, processing and marketing wild animals trophies

LEARNING METHODS:

- Lecture and Discussion
- Demonstration
- Simulation
- Role playing
- Field work

ASSESSMENT METHODS:	
• Interview • Written Test • Observation • Demonstration with Oral Questioning	

ASSESSMENT CRITERIA:

MODULE CONTENTS:

LO.1. Identify and Recognize Wild Species

- Resources and equipment for use in recognition activity are located and identified.

- Available processes for wild animals' recognition are identified, selected, and prepared for use.

- Wild animals are identified according to their behavior and home range

- Specified animals are recognized and named according to their identifiable characteristics.

- Brief descriptions of wild animal habits, characteristics, and significant features are recorded and documented.

- Handling, transporting, and housing wild animals are conducted in compliance with animal ethics guidelines, wild animal welfare regulations, and statutory requirements.

LO.2. Establish and Manage Wildlife Conservation Areas

- Protected areas designated for wildlife conservation are identified according to their potential resources and aims.

- Characteristics of wildlife habitat refugees are identified.

- Location and boundaries for the wildlife habitat refuge maintenance job are determined following the vertebrate pest management strategy and monitoring program.

- The time and resources need to complete the wildlife habitat maintenance job are identified.

- Environmental risks and hazards associated with the wildlife habitat refuge maintenance job are identified following OHS standards, statutory and local authority requirements.

- Desirable animal species are protected and habitat refuges that protect desirable animal species are maintained following industry practice and environmental statutory requirements.

LO.3. **Carry out conservation of endangered and endemic species**

- Materials or tools and suitable PPE are selected, used, and maintained where required.

- Conservation systems for endangered and endemic species are identified and applied

as directed

- Data is recorded to conservation plan and database requirements.
- Location and times of observations are recorded to organization requirements.
- OHS requirements are followed by legislative requirements and organizational policies and procedures.

LO.4. Collect and record wildlife resource data

- Specific requirements of the data to be collected are determined by discussion with the supervisor or by reading work instructions.
- Wildlife resource data collection methods are selected and record the data in the correct format to meet specific requirements.
- Advice about proposed data collection is communicated to others as required
- Difficulties that may be encountered in collecting data are identified and advice is sought from the supervisor if needed.
- Legible and accurate records are completed in the standard format.

LO.5. Utilize Consumptive and Non-Consumptive Wildlife

- Ways of consumptive wildlife utilization will be identified.
- Relevant sources of information are identified and used for the purpose
- Appropriate OHS requirements are identified and followed throughout work processes
- Rules and regulations for wildlife resource utilization are identified and applied.
- Needs of customers' wildlife hunting are implemented sustainably according to established regulation
- Ways of non-consumptive wildlife utilization are identified and applied considering cultural diversity
- Civet musk collection, tourism, and photography are conducted according to work ethics and established regulations.

LO.6. Establish and manage wild animal farming

- Sites for wildlife farming are identified and proposed based on climatic conditions and animal requirement
- Materials, tools, and equipment relevant to work activities are identified and prepared according to organizational guideline
- Rearing habitats are constructed based on the objective of the organization and wildlife protection rules

- Feed, water, and shelter are provided to wild animals considering animal population and distance to be traveled
- Wild animals trophies are harvested, processed, and marketed according to organizational policy and established regulation

Annex: 2 Resource Requirements

	AGR NRC2 M06 0422 Applying Sustainable Wildlife Conservation and Development			
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1. 1	TTLM	Prepared by trainer		1:1
2.	Reference Books			
2.1.	Report of the task force on consumptive wildlife utilization in Kenya. Nairobi, Kenya. vi 101pp.	Ministry of Tourism and Wildlife (2019).	5	1:5
3.	Journals/Publication/Magazines			
3.1.	Commercial and Sustainable Use of Wildlife: Suggestions to improve conservation, land management and rural economies	Rosie Cooney 2008		
3.2.	Wildlife Utilization And Game Ranching	National union for conservation of nature and natural resources: Morges, Switzerland, 1976	5	1:5
3.3.	Best Practices for Wildlife Control Operators	Curtis PD, Shultz J. 2008. Thomson Delmar Learning.	5pc	1:5
3.4.	Crocodile management in Ethiopia: a report presented to the Ethiopian wildlife Conservation authority on behalf of the IUCN-SSC crocodile specialist group	MATTHEW H. SHIRLEY, LUDWIG SIEGE, AND MESERET ADEMASU 2014	5pc	1:5
3.5.	Wildlife Damage Control	Hone J. 2007. CSIRO Publishing.	5pc	1:5
3.6.	Tourism and Protected Areas: Benefits Beyond Boundaries	Bushell R, Eagles PFJ. 2006. CABI.	5pc	1:5
3.7.	Wildlife Ecology, Conservation,	Sinclair ARE, Fryxell JM,	5pc	1:5

	and Management	Caughley G. 2006. 2nd ed. Blackwell Publishing.			
B.	**Learning Facilities & Infrastructure**				
1.	Lecture room	5 m x 8 m	1pc	25
2.	Library	5 m x 6 m	1	1:25
3.	Visual training Media	LCD, Laptops	1 Pcs	1:25
4.	Notice board	120*100 Cm	1 Pcs	1:25
5.	White board	240 Cm *120 Cm	1 Pcs	1:25
6.	Demonstration site at the college	5m x 10 m	1	1:25
C.	Consumable Materials				
1.	Stationary (brochures, booklets and pamphlets, field books)	Standard	25	1:1
2.	Printer	HP LaserJet 2055	1pc	1:25
3	Printer ink	HP laser jet	1pc	1:25
4	Field bags	High quality standards	25pc	1:1
5	Tents	Standard	5pc	1:5
6	Sleeping bag	size: 210*70cm / 82.68*27.56inch Weight: 200g	25pc	1:1
7	Sponge mattress	Standard		1:1
D.	**Tools and Equipments**				
1.	Computer	DELL 4RAM GB	1pc	1:25
2.	Software	Standard		1:25
3.	Cable and its accessories for internet networking	Standard	.	1:5
4.	TV, radio, internet	Standard		1:25
5.	GPS,	Garmin	5	1:5
6.	Binocular	Binocular style (standard roofprism), magnification (8X)	12	1:2
7.	darting gun	Standard	1	1:25
8.	Anesthesia,	Standard		1:25
9.	tranquilizer,	Standard		1:25

10.	Drugs	Standard		1:25
11.	Cameras	Digital, 20MP	5pc	1:5
12.	video recorders	Standard	1pc	1:25
13.	Abattoirs	4mx5m=20^2	1	1:25
14.	Knife,	Full L:15 cm, Blade L:8 cm, Blade Th: 5.9 mm, Blade material: DC53 Steel Blade Hardness:61-62 HRC HandleMaterial:G10	25pc	1:1
15.	Scissors	Yasaka F.Cut 6.5 Cutting Shears	13pc	1:2
16.	Protective gloves and clothing	Leather and khaki	25	1:1
17	Boats	Standard	25 pairs	1:5
18	Wetsuits	Standard	25	1:1
19	Skin-diving gear	Standard	25	1:1
20	Animal trapping and catching kit	Standard	5pc	1:5
21	Mountain bicycle	Brand and high quality	1pc	1:25
22	Musk collection dish	Spoon made of stainless steel, cow horn	25pc	1:1
23	Mesh wire	Standard		1:5
24	Nails	Stainless steel		1:25
25	Barbed wire	High quality	1coil	1:25
26	Hammer	27mm head with 35cm handle	1pc	1:5

LEARNING MODULE 08
TVET-PROGRAMME TITLE: **Natural Resource Conservation and Development level II**
MODULE TITLE: **Applying Agricultural Extension service for Rural development**
MODULE CODE: **AGR NRC2 M08 0422**
NOMINAL DURATION: 36 Hours
MODULE DESCRIPTION: This module covers the competence required to promote the use of digital technology agricultural extension, understand adult learning, integrated gender agricultural extension and recognize indigenous knowledge.
LEARNING OUTCOMES At the end of the module the trainee will be able to: **LO1. Promote the use of digital technology in Agricultural Extension** **LO2. Understand Adult Learning** **LO3. Integrate Gender in Agricultural Extension** **LO4. Recognize Indigenous Knowledge**

MODULE CONTENTS:

LO1. Promote the use of digital technology in Agricultural Extension

   1.1. Digital technology in agricultural extension

   1.2. Skills in using digital technology

   1.3. Role of digital technologies in agricultural extension services

LO2. Understand Adult Learning

   2.1. Concept of adult learning

      2.1.1. Adult learning theories

      2.1.2. Characteristics of adult learning

      2.1.3. Adult learning approaches

      2.1.4. Purpose of Adult learning

      2.1.5. Adult learning practices

   2.2. Principles of adult learning

   2.3. Importance of adult learning in agricultural extension

   2.4. Adult learning methods

   2.5. Role of adult learning

 LO3. Integrate Gender in agricultural extension

3.1. Concept of gender

   3.1.1. Definition of Gender

   3.1.2. Historical development of Gender

   3.1.3. Importance of Gender

3.2. Creating gender awareness and sensitization

3.3. The role of gender in agriculture

3.4. Implementing Gender mainstreaming

   3.4.1.   Understanding of gender equality

   3.4.2. Mainstreaming strategy

   3.4.3. Steps of gender mainstreaming

LO4. Recognize Indigenous Knowledge

   4.1. Concept of indigenous knowledge

   4.2. Characters of indigenous knowledge

   4.3. Exchange of indigenous knowledge

   4.4. Importance of indigenous knowledge

   4.5. Controversial issues of the debate on indigenous knowledge

LEARNING METHODS:

- Lecture and Discussion
- Demonstration
- Simulation
- Role playing

ASSESSMENT METHODS:

- Written Test
- Interview
- Quiz
- Practical assignment
- Observation and Demonstration with Oral Questioning

ASSESSMENT CRITERIA:

LO.1. Promote the use of digital technology in Agricultural Extension

- The use of Digital technology in Agricultural extension is introduced to familiarize its importance
- Skills in using digital technology is built to strengthen agricultural extension services
- The role of digital technologies in agricultural extension services is understood to enhance agricultural development.

LO2. Understand Adult Learning

- The concept of adult learning is understood to bring behavioral changes
- principles of Adult learning is determined for the implementation of extension services
- The importance of Adult learning in Agricultural Extension is understood to enhance agricultural extension services
- Adult learning methods are understood to enhance the knowledge and skills of extension beneficiaries
- The role of adult learning is understood to allow farmers develop knowledge and skills

LO3. Integrate Gender in Agricultural Extension

- The concept of gender is understood to provide inclusive agricultural extension services
- Gender awareness and sensitization is created to increase the contribution of gender in agricultural development
- The role of gender in agriculture is determined to enhance agricultural development.
- Gender mainstreaming is implemented for effective outcome of extension services

LO4. Recognize Indigenous Knowledge

- The concept of indigenous knowledge is understood to strengthen the service of agricultural extension
- Characters of indigenous knowledge are understood to promote local experience
- Exchange of indigenous knowledge is promoted to enhance community development
- The importance of indigenous knowledge is understood to facilitate its contribution to the development processes.
- The controversial issues of the debate on indigenous knowledge are further studied to propose the urgent need, to document, learn, preserve, and exchange indigenous knowledge

AGR NRC2 M08 0422 Applying Agricultural Extension service for Rural development				
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	TTLM	TTTLM prepared by the trainer		
2.	Reference Books			
3.1	Concepts and Practices in Agricultural Extension in Developing Countries: A Source Book	Ananadayaseke am, P., *et al.* 2008.	5	1:5
3.2	Agricultural Extension in Developing Countries	Adams M. E., 1992	5	1:5
3.3	Agricultural Extension	FAO, …	5	1:5
4.	Journals/Publication/Magazines			
B.	*Learning Facilities & Infrastructure*			
1.	Lecture room	1.2*25	31.25 m²	
2.	Library	105 – 180 m2 area Needed Per Trainee	1	1:25
3.	Visual training Media	LCD, Laptops	1 Pcs	1:25
4	Teaching boards	White board ,Flip chart ,Smart board	1 Pcs	1:25
C.	*Consumable Materials*			
1.	Paper	4A	25	1:1
2	Note book		25	1:1
D.	*Tools and Equipments*			

LEARNING MODULE 09
TVET-PROGRAMME TITLE: **Natural Resources Conservation and Development Level II**
MODULE TITLE: **Preventing and Eliminating MUDA**
MODULE CODE: **AGR NRC2 M09 0422**
NOMINAL DURATION: 40 Hours
MODULE DESCRIPTION: This module covers the knowledge, skills, and attitude required by a worker to prevent and eliminate MUDA/wastes in his/her workplace by applying scientific problem-solving techniques and tools to enhance quality, productivity, and other kaizen elements continually. It covers responsibility for the day-to-day operation of the work and ensures Kaizen Elements are continuously improved and institutionalized.
LEARNING OUTCOMES
At the end of the module the trainee will be able to:
LO1. Prepare for work
LO2. Identify MUDA and problem
LO3. Analyze the causes of a problem
LO4. Eliminate MUDA and Assess the effectiveness of the solution
LO5. Prevent the occurrence of wastes and sustain the operation
MODULE CONTENTS:
LO1. Prepare for work
1.1. Work instructions
1.2. Interpreting Job specifications
1.3. OHS requirements
1.4. Selecting appropriate material
1.5. Identifying and checking safety equipment and tools
LO2. Identify MUDA and problem
2.1 Preparing and implementing the plan of MUDA and problem identification
2.2 Causes and effects of MUDA
2.3 Listing possible problems related to the process /Kaizen elements using statistical tools and techniques

2.4   Identifying and listing problems related to kaizen elements

2.5   Draw and analyze the current situation of the workplace by using Tools and techniques

2.6   Identifying and measuring Wastes/MUDA based on relevant procedures

2.7   Reporting identified and measured wastes

LO3. Analyze the causes of a problem

3.1   Listing all possible causes of a problem

3.2   Analyzing cause relationships using4M1E

3.3   Identifying causes of the problems

3.4   Selecting the root cause

3.5   Listing all possible ways using creative idea generation to eliminate the most critical root cause

3.6   Testing and evaluating the suggested solutions

3.7   Preparing detailed summaries of the action plan to implement the suggested solution

LO4. Eliminate MUDA and Assess the effectiveness of the solution

4.1.   MUDA elimination

4.2.   Preparing plan for MUDA elimination and implementing by medium KPT members

4.3.   Adopting the ten basic principles for improvement

4.4.   Tools and techniques to eliminate wastes/MUDA

4.5.   Reducing and or eliminating wastes/MUDA

4.6.   Identifying Tangible and intangible results

4.7.   Comparing tangible results with targets using various types of diagrams

4.8.   Reporting improvements

LO5. Prevent the occurrence of wastes and sustain the operation

5.1.   Preparing and implementing plan for MUDA prevention

5.2.   Standards required for machines and other operations

5.3.   Visual and auditory control methods

5.4.   Creating waste-free workplace using 5W and 1Hsheet

5.5.   Complete the required operation

5.6.   Updating of standard procedures and practices

5.7.   Ensuring and training work team capability on the new Standard Operating Procedures (SOPs).

LEARNING METHODS:

- Lecture and Discussion

- Démonstration
- Simulation
- Role playing

ASSESSMENT METHODS:

- Interview/Written Test

- Observation/Demonstration with Oral Questioning

ASSESSMENT CRITERIA:

LO1. Prepare for work

- Work instructions are used to determine job requirements, including method, material, and equipment.

- Job specifications are read and interpreted following the 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

- The plan of MUDA and problem identification is prepared and implemented.

- The 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 the Visual Management Board/Kaizen Board.

- Tools and techniques are used to draw and analyze the current situation of the workplace.

- Wastes/MUDA are identified and measured based on relevant procedures.

- Identified and measured wastes are reported to relevant personnel.

LO3. Analyze the 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 the effectiveness of the solution

- The plan of MUDA elimination is prepared and implemented by medium KPT members.
- A 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 following OHS and organizational requirements.
- Tangible and intangible results are identified.
- Tangible results are compared with targets using various types of diagrams.
- Improvements gained by the elimination of waste/MUDA are reported to relevant bodies.

LO5. Prevent the occurrence of wastes and sustain the operation

- The 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.
- A waste-free workplace is created using 5W and 1Hsheet.
- The completion of the required operation is done following 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

AGR NRC1 M09 0422: **Preventing and Eliminating MUDA**				
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	TTLM	TTLM prepared by the trainer		1:1
2.	Reference Books			
2.1				1:5
2.2				1:5
3.	Journals/Publication/Magazines			1:5
B.	*Learning Facilities & Infrastructure*			
1.	Lecture room	1.2*25	31.25m^2	
2	Library	105 – 180 m2 area Needed Per Trainee	1	1:25
3	Visual training Media	LCD, Laptops	1 Pcs	1:25
4	Teaching boards	White board ,Flip chart ,Smart board	1 Pcs	1:25
C.	Consumable Materials			
1.	Stationary (Papers, pens, pencils, fixer, marker)		25pc each	1:1
2.	Printer ink	HP laser jet 26A/82A	1pc	1:25
D.	*Tools and Equipments*			
1.	Dust masks/goggles		25pc	1:1
2.	Working cloth	Overall	25pc	1:1
3.	Glove	Rubber/leather	25pc	1:1

4.	First aid and Safety shoes		25pc	1:1

APPENDEX-1

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

Demonstration	❖ Conduct close follow up ❖ Use verbal description ❖ Provide special attention in the process of guidance ❖ facilitate the support of peer trainees ❖ Prepare & use simulation	❖ use Sign language interpreter ❖ Use video recorded material ❖ Ensure attention of the trainees ❖ Provide structured training ❖ Show clear and short method ❖ Use gesture ❖ Provide tutorial support (if necessary)	❖ Illustrate in clear & short method ❖ Use Video recorded material ❖ Ensure the attention of the trainees ❖ Provide tutorial support (if necessary)	❖ Facilitate and support the trainees having severe upper limbs impairment to operate equipments/ machines ❖ Assign peer trainees to assist ❖ Conduct close follow up ❖ Provide tutorial support (if necessary)
Group discussion	❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member ❖ Brief the thematic issues of the work	❖ Use sign language interpreters ❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member	❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member ❖ Inform the group members to speak loudly	❖ Introduce the trainees with their peers
Exercise	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process/practical training ❖ Introduce new and relevant vocabularies	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process/ practical training	❖ Assign peer trainees ❖ Use additional nominal hours if necessary
Individual assignment	❖ prepare the assignment questions in large text ❖ Encourage the trainees to prepare and submit the assignment in large texts ❖ Make available recorded assignment questions ❖ Facilitate the trainees to prepare and submit the assignment in soft or hard copy	❖ Use sign language interpreter ❖ Provide briefing /orientation on the assignment ❖ Provide visual recorded material	❖ Provide briefing /orientation on the assignment ❖ Provide visual recorded material	

ASSESSMENT METHODS:

Interview		❖ Use sign language interpreter ❖ Ensure or conform whether the proper communication was conducted with the trainee through the service of the sign language interpreter ❖ Use short and clear questioning ❖ Time extension	❖ Speak loudly ❖ Using sign language interpreter if necessary	❖ Use written response as an option for the trainees having speech challenges
Written test	❖ Prepare the exam in large texts ❖ Use interview as an option if necessary ❖ Prepare the exam in audio format ❖ Assign human reader (if necessary) ❖ Time extension	❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers ❖ Avoid essay writing ❖ Time extension	❖ Prepare the exam using short sentences, multiple choices, true or false, matching and short answers if necessary.	❖ Use oral response as an option to give answer for trainees having severe upper limb impairment ❖ Time extension for trainees having severe upper limb impairment
Demonstration/Observation	❖ Brief the instruction or provide them in large text ❖ Time extension	❖ Use sign language interpreter ❖ Brief on the instruction of the exam ❖ Provide activity-based/ practical assessment method ❖ Time extension	❖ Provide activity based assessment ❖ Brief on the instruction of the exam ❖ Use loud voice ❖ Time extension	❖ Provide activity based assessment ❖ Conduct close follow up ❖ Time extension

Acknowledgement

The **Ministry of Labor and Skills** wishes to thank and extend its appreciation for the trainers who donated their effort and time to develop this outcome based curriculum for the TVET program Natural Resources Conservation and Development Level II.

The experts who developed the curriculum

No	Name	Qualification	Educational background	Region	College	Mobile number	E-mail
1	Workeneh Asmamaw	Curriculum and Training materials development expert	Food Security and Development Studies	AA	Ministry of Labour and Skills	0955205855	workasmamaw@gmail.com
2	Ermias Galcho	Lecturer	MSc. In Land Administration	SNNPR	Wolaita Sodo	0913476163/ 0916579897	ermiasgalcho@yahoo.com
3	Girma Biru	Lecturer	MSc. Water Resource Engineering	Oromia	Agarfa	0910359778	obsa.yes@gmail.com
4	Ambachew Asnake	Lecturer	MSc. in Irrigation and Drainage Engineering	SW	Mizan	0918743263/ 0937341827	ambeasne1@gmail.com
5	Melaku Ayele	Lecturer	MSc. Water Resource Engineering		Alage	0910101270	meloayu@gmail.com
6	Fantahun Teshome	Lecturer	MSc. Water Resource Engineering		Gewane	0922213732	afantahunteshome@gmail.com