

FISHERY AND AQUACULTURE

Level – II



TVET Curriculum Version-I

Based on July 2022, Version- I Occupational Standard

November, 2022
Addis Ababa, Ethiopia

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Preface

The reformed ATVT-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 ATVT delivery. The requirements from the world of work are analyzed and documented – taking into account international benchmarking – as occupational standards (OS).

In the reformed ATVT-System, curricula and curriculum development play an important role with regard to quality driven comparable ATVT-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 ATVT Bureaus, colleges, Industries, Institutes and universities based on the occupational standard for **Fishery and aquaculture Level II**. The curriculum development process has been actively supported and facilitated by **Ministry of Labor and Skills**.

1 ATVT-Program Design

1.1 ATVT-Program Title: Fishery and Aquaculture Level II

1.2 ATVT-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 **fishery and aquaculture level II Worker** 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 **fishery and aquaculture**.

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 Perform Fishing Make and mend fishing net, Perform fish feeding, Perform Fish harvesting, Apply Emergency Procedures , Perform fish gutting and filleting, Implement Agribusiness Marketing, Apply Basics of Human Nutrition Practices and Apply 5S Procedures in accordance with the performance criteria and evidence guide described in the OS.

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1.3 Training Program Structure

Unit of Competence	Module Code & Title	Learning Outcomes	Duration (In Hours)
AGR FAQ2 01 0722 Perform Fishing	AGR FAQ2 M01 1122 Performing Fishing	<ul style="list-style-type: none"> • Understand Biology and behavior of fish • Prepare for fishing activities • Assess and Adjust fishing gears • Position fish gears to optimize catch • Collect the caught fish • Complete fishing activities 	80
AGR FAQ2 03 0722 Perform fish feeding	AGR FAQ2 M02 1122 Performing fish feeding	<ul style="list-style-type: none"> • Prepare for feeding • Identify Sources and Types of feeds • Perform feeding • Clean up on completion of work 	75
AGR FAQ2 02 0722 Make and mend fishing net	AGR FAQ2 M03 1122 Making and mending fishing net	<ul style="list-style-type: none"> • Prepare for net making and mending • Make fishing net • Mend fishing net • Complete make and mend fishing net 	75

AGR FAQ2 05 0722	Apply Emergency Procedures	AGR FAQ2 M04 1122	Applying Emergency Procedures	<ul style="list-style-type: none"> • Identify emergencies risks • Take risk and hazards mitigation measures • Complete works 	50
AGR FAQ2 04 0722	Perform Fish harvesting	AGR FAQ2 M05 1122	Performing Fish harvesting	<ul style="list-style-type: none"> • Prepare for fish harvest • Perform Fish harvesting from aquaculture • Clean up on completion of work. 	50
				<ul style="list-style-type: none"> • 	

<u>AGR FAQ2 06 0722</u>	Perform fish gutting and filleting	<u>AGR FAQ2 M06 1122</u>	Performing fish gutting and filleting	<ul style="list-style-type: none"> • Prepare work area for gutting and filleting • Perform fish gutting • Perform fish filleting • Finalize gutting and filleting operation 	75
<u>AGR FAQ2 09 0722</u>	Apply 5S Procedures	<u>AGR FAQ2 M07 1122</u>	Applying 5S Procedures	<ul style="list-style-type: none"> • Prepare for work. • Sort items. • Set all items in order. • Perform shine activities. • Standardize 5S. • Sustain 5S. 	45
<u>AGR FAQ2 07 0722</u>	Implement Agribusiness Marketing	<u>AGR FAQ2 M08 1122</u>	Implementing Agribusiness Marketing	<ul style="list-style-type: none"> • Understand concept of agricultural marketing • Understand concepts of agribusiness • Identify marketing targets for Agricultural products • Implement marketing strategy • Establish contract farming • Apply Agricultural marketing services 	40

<p><u>AGR FAQ2 08 0722</u> Apply Basics of Human Nutrition Practices</p>	<p><u>AGR FAQ2 09 1122</u> Applying Basics of Human Nutrition Practices</p>	<ul style="list-style-type: none"> • Identify Categories of agricultural foods items • Recognize malnutrition in the community • Identify the role of agriculture in nutrition • Demonstrate diversified Agricultural food production and consumption techniques • Perform proper handling and storage of agricultural food products • Document and report food production, consumption and difficulties 	<p>48</p>
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1.4 Duration of the ATVT-Program

The Program will have duration of **538** 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	Module title	TVET Institution training		Cooperative training	Total hours	Remark
		Theory	Practical			
1.	Performing Fishing	24	36	20	80	
2.	Performing fish feeding	23	32	20	75	
3.	Making and mending fishing net	23	37	15	75	
4.	Applying Emergency Procedures	15	20	15	50	
5.	Performing Fish harvesting	15	20	15	50	
6.	Performing fish gutting and filleting	23	35	17	75	
7.	Applying 5S Procedures	14	18	13	45	
8.	Implementing Agribusiness Marketing	12	18	10	40	
9.	Applying Basics of Human Nutrition Practices	15	23	10	48	
Total hour					538	

1.5 Qualification Level and Certification

Qualification is a formal certificate issued by an official agency in recognition to that an individual has been assessed as achieving learning outcomes or competencies to the standard specified for the qualification title. A qualification confers official recognition of value in the labour market and in further education and training. Based on the descriptors elaborated on the Ethiopian National ATVT Qualification Framework (NTQF) the qualification of this specific ATVT Program is Certificate II according to the level. The trainee will be awarded transcript and the institutional certificate after successfully completing all the modules in the level.

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.

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1.7 Entry Requirements

In principle everyone should be able to access training based on the labor market. Hence the prospective participants of this program are any citizens who possess the entry requirement directive of the Ministry of Labor and Skills.

1.8 Mode of Delivery

This ATVT-Program is characterized as a formal Program on middle level technical skills. The mode of training delivery is in the institution and co-operative training. Cooperative training is a model of training by the cooperation of enterprises/industries and ATVT institutions whereby trainees spend much of their time in the enterprises/industries to acquire industrial knowledge, skills, experiences, and attitudes of the industrial environment and the remaining time in ATVT institutions to acquire basic skills and theoretical concepts. Therefore, it is necessary to make the ATVT sector more effective by strengthening a system of cooperative training accepted by the industry.

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

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1.9 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. Therefore, a trainee is required to earn at least 60% to be theoretically qualified. This result should be 18% or more when converted to 30%. Regarding performance appraisal results, it must score at least 80% or at least 32% or more when converted to 40%. Must cooperate at least 80% out of 100% in cooperative training; When converted to 30%, it must register 24%.

1.10 ATVT Teachers Profile

The trainers conducting this particular ATVT Program are **B-Level** and above who have satisfactory practical experiences or equivalent qualifications.

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1.11 Training and Assessment methodology

The program is delivered using a variety of training methods. The table below shows training and assessment methodology for non-impaired trainees and with reasonable adjustment for impaired trainees. In addition, as per the nature of the module title the trainer can use recommended and possible training and assessment methodology.

Learning Methods:				
For none impaired trainees	Reasonable Adjustment for Trainees with Disability (TWD)			
	Low Vision	Deaf	Hard of hearing	Physical impairment
Lecture-discussion	<ul style="list-style-type: none"> ❖ Provide large print text ❖ 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 	<ul style="list-style-type: none"> ❖ Assign sign language 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 	<ul style="list-style-type: none"> ❖ 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 	<ul style="list-style-type: none"> ❖ 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

<p>Lecture-discussion</p>	<ul style="list-style-type: none"> ❖ Provide large print text ❖ 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 	<ul style="list-style-type: none"> ❖ Assign sign language 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 	<ul style="list-style-type: none"> ❖ 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 	<ul style="list-style-type: none"> ❖ 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
<p>Demonstration</p>	<ul style="list-style-type: none"> ❖ Conduct close follow up ❖ Use verbal description ❖ Provide special attention in the process of guidance ❖ facilitate the support of peer trainees ❖ Prepare & use simulation 	<ul style="list-style-type: none"> ❖ 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) 	<ul style="list-style-type: none"> ❖ Illustrate in clear & short method ❖ Use Video recorded material ❖ Ensure the attention of the trainees ❖ provide tutorial support (if necessary) 	<ul style="list-style-type: none"> ❖ 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	<ul style="list-style-type: none"> ❖ 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 	<ul style="list-style-type: none"> ❖ Use sign language interpreters ❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member 	<ul style="list-style-type: none"> ❖ 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 	<ul style="list-style-type: none"> ❖ Introduce the trainees with their peers
Exercise	<ul style="list-style-type: none"> ❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process 	<ul style="list-style-type: none"> ❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process/practical training ❖ Introduce new and relevant vocabularies 	<ul style="list-style-type: none"> ❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process/ practical training 	<ul style="list-style-type: none"> ❖ Assign peer trainees ❖ Use additional nominal hours if necessary
Individual assignment	<ul style="list-style-type: none"> ❖ 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 	<ul style="list-style-type: none"> ❖ Use sign language interpreter ❖ Provide briefing /orientation on the assignment ❖ Provide visual recorded material 	<ul style="list-style-type: none"> ❖ Provide briefing /orientation on the assignment ❖ Provide visual recorded material 	

Assessment Methods:				
Interview		<ul style="list-style-type: none"> ❖ 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 	<ul style="list-style-type: none"> ❖ Speak loudly ❖ Using sign language interpreter if necessary 	<ul style="list-style-type: none"> ❖ Use written response as an option for the trainees having speech challenges
Written test	<ul style="list-style-type: none"> ❖ 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 	<ul style="list-style-type: none"> ❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers ❖ Avoid essay writing ❖ Time extension 	<ul style="list-style-type: none"> ❖ Prepare the exam using short sentences, multiple choices, true or false, matching and short answers if necessary. 	<ul style="list-style-type: none"> ❖ 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	<ul style="list-style-type: none"> ❖ Brief the instruction or provide them in large text ❖ Time extension 	<ul style="list-style-type: none"> ❖ Use sign language interpreter ❖ Brief on the instruction of the exam ❖ Provide activity-based/ practical assessment method ❖ Time extension 	<ul style="list-style-type: none"> ❖ Provide activity based assessment ❖ Brief on the instruction of the exam ❖ Use loud voice ❖ Time extension 	<ul style="list-style-type: none"> ❖ Provide activity based assessment ❖ Conduct close follow up ❖ Time extension

2. Learning Module Design

Module Code and Title	AGR FAQ2 M01 1122 Performing Fishing
Nominal Duration :	80 Hours
Module Description : This module covers the skills, knowledge and attitude required to adjust and position fishing gears and catch fish from water body.	
<p>Learning Outcomes</p> <p>At the end of the module the trainee will be able to:</p> <p>LO1. Understand Biology and behavior of fish</p> <p>LO2. Prepare for fishing activities</p> <p>LO3. Assess and Adjust fishing gears</p> <p>LO4. Position fish gears to optimize catch</p> <p>LO5. Collect the caught fish</p> <p>LO6. Complete fishing activities</p>	
<p>Module Contents:</p> <p>LO-1: Understand Biology and behavior of fish</p> <p>1.1. Basic Anatomy and Physiology of Fish</p> <p>1.2. Reproduction pattern of fish</p> <p>1.3. Fish habitats and species</p> <p>LO-2: Prepare for fishing activities</p> <p>2.1. Fishing tools, equipment and materials</p> <p>2.2. Occupational health and safety(OHS) procedures</p> <p>2.3. Unsafe and inefficient working area</p> <p>2.4. Providing clear instruction</p> <p>2.5. Fishing techniques</p> <p>LO-3 Assess and Adjust fishing gears</p> <p>3.1 Performance of fishing gears</p> <p>3.2 Measuring fishing gears components</p> <p>3.3 Assess and compare fish gears operation</p> <p>3.4 Adjust and recondition Fishing gears</p> <p>LO-4 Position fish gears to optimize catch</p> <p>4.1 Set Fishing gears</p> <p>4.2 Analyzing Catches nets</p>	

4.3 Monitoring position of fish gears

4.4 Monitoring Boat position

LO-5 Collect the caught fish

5.1. Collecting fish

5.2. Sorting and returning undersized fish

5.3. Handling of caught fish

LO-6 Complete fishing activities

6.1. Handling waste materials

6.2. Handling and transporting tools, materials and equipment

6.3. Report and Document work outcomes

Learning Methods:

- Lecture
- Group discussion
- Demonstration
- Practical work
- Role playing
- Brainstorming
- Simulation

Assessment Methods:

- Interview/Written Test
- Observation/Demonstration with Oral Questioning

Assessment criteria:

LO-1: Understand Biology and behavior of fish

- Basic information on anatomy and physiology of fish is identified and understood
- Reproduction pattern of fish are understood
- Fish habitats and common species are understood and identified

LO:2 Prepare for fishing activities

- Fishing tools, equipment and materials are identified and organized.
- Occupational health and safety(OHS) procedures and safe working practice are applied including the selection of personal protective equipment (PPE)
- Unsafe and inefficient aspects of the work area are identified and rectified.
- Clear instructions are provided to all crew covering the task and the methods to be used.

LO:3 Assess and Adjust fishing gears

- The performance of fishing gears is assessed according to the national and organizational standard.
- Measurements are made of fishing gears components to confirm symmetry.
- Effectiveness of deployment of fishing gears components is assessed by comparing observed operation of components with gear plans.
- Fishing gears components are adjusted, reconditioned or constructed to rectify gear performance according to the industry standard.

LO:4 Position fish gears to optimize catch

- Fishing gears are set on the water body according to the working guideline of the industry
- Catches are analyzed to determine the effectiveness of beach seines, mesh nets or gill nets.
- Position of fish gears is monitored and altered when necessary to optimize the catch.
- Boat position during the deployment and retrieval of fishing gear is monitored for the factors that contribute to a successful fishing activity and altered as required.

LO:5 Collect the caught fish

- Fishes are collected from the fishing nets and hooks
- Sorting of undersized and by catch fish from the catch and return back to water immediately are performed
- Handling of caught fishes are performed according to organizational procedures and standards

LO:6 Complete fishing activities

- Waste material produced during fishing is handled according to rules and regulations
- Materials, tools and equipment are handled and transported according to supervisor instructions and industry guidelines.
- Materials are returned to store or disposed of according to supervisor instructions.
- Tools and equipment are cleaned, maintained and stored according to manufacturer specifications and supervisor instructions.
- Work outcomes and difficulties in completing work are reported to supervisor, feedback on performance is sought and any required improvements are noted for future action

Module Code and Title	AGR FAQ2 M02 1122 Performing Fish Feeding
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Nominal Duration :	75 Hours
Module Description : This module covers the required knowledge, skills and attitude to identify sources and types of feeds, prepare for feeding and perform feeding.	
Training Outcomes At the end of the module the trainee will be able to: LO1. Prepare for feeding LO2. Identify Sources and Types of feeds LO3. Perform feeding LO4. Clean up on completion of work	
Module Contents: LO-1: Prepare for feeding 1.1. Identifying Tools, materials and equipment 1.2. Types of fish feed 1.3. Occupational health and safety(OHS) 1.4. Fish species and stock LO-2: Identify Sources and Types of feeds 2.1 Fish feed sources 2.2 Fish species feeding habits 2.3 Artificial feeds 2.4 Natural feed LO-3: Perform feeding 3.1 Feeding requirements of stock species 3.2 Methods of Fish Feeding 3.3 Feeding schedule 3.4 Factors and condition affecting feeding 3.5 Optimum stocking density 3.6 Monitoring feeding activities 3.7 Condition of feeding operation 3.8 Feed storage LO-4: Clean up on completion of work 4.1 Identify usable and disposable materials 4.2 Handling Material, Tools, equipment and machinery 4.3 Reporting organized documents	

Learning Methods:

- Lecture
- Group discussion
- Demonstration
- Practical work
- Role playing
- Brainstorming
- Simulation

Assessment Methods:

- Interview/Written Test
- Observation/Demonstration with Oral Questioning

Assessment Criteria:

LO-1. Prepare for feeding

- Tools, materials and equipment are identified and organized for fish feeding
- Types of fish feed are understood
- Personal protective equipment (PPE) and Occupational health and safety(OHS) are identified and prepared for use
- Fish species and stock are identified and understood for feeding

LO-2. Identify Sources and Types of feeds

- Fish feed sources are identified.
- Fish species feeding habits are determined
- Artificial feeds are Identified
- Natural feed are Identified

LO-3. Perform feeding

- Feeding requirements of stock species, under given conditions are identified.
- Methods of Feeding Fish are identified and performed
- Feeding schedule are performed
- Factors and conditions affecting feeding are identified
- Optimum stocking density under given conditions is determined.
- Effectiveness of feeding activities is monitored and steps taken to reduce wastage.
- Conditions affecting feeding operation are considered and allowance made during feeding.

- Feeds are stored in a way that minimizes degradation or contamination.

LO-4. Clean up on completion of work

- usable Materials are returned to store and disposable material are disposed according the work instruction
- Material, Tools, equipment and machinery are cleaned, maintained, handled, transported and stored according to the industry guidelines.
- Documents are organized or documented and reported to Responsible body

Module Code and Title	AGR FAQ2 M03 1122 Making and mending fishing net
Nominal Duration :	75 Hours
Module Description : This module covers the required knowledge, skills and attitude to make, mend fishing nets and proper handling materials tools and waste disposal.	
Training Outcomes At the end of the module the trainee will be able to: LO1. Prepare for net making and mending LO2. Make fishing net LO3. Mend fishing net LO4 Complete make and mend fishing net	
Module Contents: LO-1: Prepare for net making and mending 1.1. Net making and repairing area 1.2. Identifying Tools, materials and equipment 1.3. Types of fishing nets 1.4. Occupational health and safety(OHS) 1.5. Net design and components LO-2: Make fishing net 2.1 Set up fish net making 2.2 Net making 2.3 Attaching fish net components LO-3 Mend fishing net 3.1 Identifying damaged place of fishing net 3.2 Tying knots 3.3 Joining the existing and replacing materials LO-4 Complete make and mend fishing net 4.1 Handling waste materials 4.2 Cleaning and storing materials, tools and equipment 4.3 Document and report work	

Learning Methods:

- Lecture
- Group discussion
- Demonstration
- Practical work
- Role playing
- Brainstorming
- Simulation

Assessment Methods:

- Interview/Written Test
- Observation/Demonstration with Oral Questioning

Assessment Criteria:

LO1: Prepare for net making and mending

- Net making and repairing area are identified and organized
- *Tools, materials and equipment* are identified and organized for net making and mending
- *Types* of fishing nets are identified and understood
- *Personal protective equipment (PPE)* and *Occupational health and safety(OHS)* are identified and prepared for use
- Net design are identified and interpreted according to the specification
- *Net components* and source associated are identified and ready to secure

LO2: Make fishing net

- Setting up fish net making is performed by choosing string and by preparing shuttle and gauge
- Net making are started by loading shuttle and make a loop with an over hand knot
- Net making are finished by replace gauge and shuttle over the loops
- The fish nets are completed with frame or weight
- net component materials are securely attached according to specification standard

LO3: Mend fishing net

- Damaged place are identified and *twines are secured* to the net according to net repairing procedure
- Twine is used to tie *knots* that make meshes to resemble original netting
- The existing and replacement materials are joined using twine and knots/ lacing to resemble original netting

LO4: Complete make and mend fishing net

- During net making and repairing *Waste materials* are handled according to industry

guidelines.

- Materials, tools and equipment are cleaned and stored at the appropriated place
- Works are competed, reported and documented

Module Code and Title	AGR FAQ2 M04 1122 Apply Emergency Procedures
NOMINAL DURATION:	50 hours
MODULE DESCRIPTION: This module covers the knowledge, skills and attitude required to Identify emergencies risks and hazards, take mitigation measures and assess risk and hazards impact.	
<p>Training Outcome;</p> <p>At the end of the module the trainee will be able to:</p> <p>LO1. Identify emergencies risks.</p> <p>LO2. Take risk and hazards mitigation measures.</p> <p>LO3. Complete works.</p>	
<p>MODULE CONTENTS:</p> <p>LO 1. Identify emergencies risks</p> <p>1.1 Allocation of labor and financial resources</p> <p>1.2 .Contingency plans and loss minimization strategies</p> <p>1.3 .Type of risks and hazards</p> <p>1.4 . Risk and hazard Presentation mechanisms</p> <p>1.5 . Monitoring equipment storage</p> <p>1.6 .Select personal protective equipment (PPE)</p> <p>LO 2. Take risk and hazards mitigation measures.</p> <p>2.1.Prioritizing risks and hazards</p> <p>2.2.Testing Contingency plans and loss minimization strategies</p> <p>2.3.Risk mitigation measures</p> <p>2.4.Handling of Stock and asset</p> <p>2.5.Occupational health and safety requirements.</p> <p>2.6.Way of communication</p> <p>LO 3. Complete works</p> <p>3.1 Cleaning, repairing and storing Equipment</p> <p>3.2 Rreplacing Lost stock and assets</p> <p>3.3 Reporting organized document</p>	
Learning Methods:	
<ul style="list-style-type: none"> • Lecture and Discussion • Démonstration • Group work 	

- Simulation
- Role playing

Assessment Methods:

- Written test
- Oral questioning
- Practical demonstration
- Assignment

Assessment Criteria:

LO .1 Identify emergencies risks

- Contingency plans and loss minimization strategies are noted and allocations of labor and financial resources are confirmed with management.
- Type of risks and hazards are identified and understood
- Risks and hazard presentation mechanisms are identified and understood according to occupational health safety (OHS) procedures.
- Equipment storage is monitored to ensure ready access and maintenance in working condition.
- Suitable personal protective equipment (PPE) is selected and checked prior to use

LO .2 Take risk and hazards mitigation measures.

- Identified risks and hazards are prioritized according to the working procedures.
- Contingency plans and loss minimization strategies are tested under simulated emergency conditions, performance analyzed and recommendations made to management on improvements
- Risk mitigation measures are applied according to the working procedures.
- Stock and asset are properly handled to minimize risks and hazards for fishery and aquaculture.
- Equipment operation and work practices conform to occupational health and safety requirements.
- Appropriate communication ways are performed according to the working procedures.

LO .3 Complete works

- Equipment is cleaned, repaired and stored in accordance with enterprise procedures.
- Lost stock and assets are replaced; damages are repaired quickly and efficiently.
- Documents are organized, documented and reported according to the enterprise guideline.

Module Code and Title	AGR FAQ2 M05 1122 Performing Fish harvesting
Nominal Duration :	50 Hours
Module Description : This module covers the knowledge, skills and attitude required to perform fish harvesting techniques from aquaculture, prepare facilities, proper harvesting of fish from aquaculture fish farm and handle harvested fish.	
<p>Training Outcomes</p> <p>At the end of the module the trainee will be able to:</p> <p>LO1. Prepare for fish harvest</p> <p>LO2. Perform Fish harvesting from aquaculture</p> <p>LO3. Clean up on completion of work.</p>	
<p>Module Contents:</p> <p>LO-1: Prepare for fish harvest</p> <ul style="list-style-type: none"> 1.1 Preparing Material, tools and equipment 1.2 Harvesting schedule 1.3 Labour and resource requirements 1.4 Occupational health safety (OHS) 1.5 Risk factors and mitigation procedures <p>LO-2: Perform Fish harvesting from aquaculture</p> <ul style="list-style-type: none"> 2.1 Fish harvesting techniques and principles 2.2 Occupational Health and Safety Requirements 2.3 Positioning, Calibrating and Operating Equipment 2.4 Set Fishing net 2.5 Fish harvest technology 2.6 Seining Pond and lifting Cages 2.7 Packing and transporting harvested fish 2.8 Process and store harvested fish <p>LO-3 Clean up on completion of work.</p> <ul style="list-style-type: none"> 3.1 Handling and cleaning harvested fish 3.2 Transport of live and dead fish stock 3.3 Checking harvested fish 3.4 Recording harvested fish. 3.5 Handling Waste material 	

Learning Methods:

- Lecture
- Group discussion
- Demonstration
- Role playing
- Brainstorming
- Simulation

Assessment Methods:

- Interview/Written Test
- Observation/Demonstration with Oral Questioning

Assessment Criteria:

LO-1: Prepare for fish harvest

- Material, tools and equipment are prepared for harvesting fish
- Harvest schedule is identified and confirmed with marketing and production harvest period.
- Labour and resource requirements for harvest are identified
- Suitable personal protective equipment (PPE) and Occupational health safety (OHS) is identified and prepared for use
- Risk factors which could affect the quality of stock during harvest are identified

LO-2: Perform Fish harvesting from aquaculture

- Fish harvesting from Aquaculture by using different harvesting techniques are applied
- Equipment operation and work practices conform with occupational health and safety requirements
- Equipment is positioned, calibrated and operated according to farm procedures and manufacturer's guidelines
- Fishing net in aquaculture set to harvest fish according to Traditional method, modern method and harvesting machine fish harvest from aquaculture farms.
- Most significant among the technological developments which support the evolution of fish harvest technology.
- Pond are seined, Cages are lifted , Harvested fishes are packed and transported
- Harvested fish is processed and stored according to handling standards

LO-3 Clean up on completion of work.

- Handle and clean harvested fish from aquaculture
- Transport of live fish stock is arranged and packing monitored to ensure minimal stock stress and damage records
- Harvest quantity, quality and size are confirmed and records prepared for harvested fish.
- Transport of dead stock is arranged and packing monitored to ensure minimal stock damage records
- Cleaned working areas and Waste material produced during work is handled according to working procedures

Module Code and Title:	AGR FAQ2 M06 1122 Performing fish gutting and filleting
NOMINAL DURATION:	75 hours
<p>MODULE DESCRIPTION: This module covers the knowledge, skills and attitude required to perform gutting, cut filets slice cutlets, skinning, cutting portions from the fillets. It includes the ability to select and check equipment, fillet, trim and remove bones and skin, cut portions, rinse and chilling these fish product within an organization or aquaculture facility, or wholesale or retail outlet that sells fish.</p>	
<p>LEARNING OUTCOMES</p> <p>At the end of this module the trainees will be able to:</p> <p>LO 1: Prepare work area for gutting and filleting</p> <p>LO 2. Perform fish gutting</p> <p>LO 3. Perform fish filleting</p> <p>LO 4. Finalize gutting and filleting operation</p>	
<p>MODULE CONTENTS</p> <p>LO 1. Prepare work area for gutting and filleting</p> <p>1.1. Tools, materials, equipment and machines</p> <p>1.2. Occupational health and safety(OHS)</p> <p>1.3. Signs of defects, spoilage and parasites</p> <p>1.4. Cleaning work area</p> <p>LO 2. Perform fish gutting</p> <p>2.1. Methods of Fish gutting</p> <p>2.2. Cleaning /Gutting Fish</p> <p>2.2.1. Removing scales and skin</p> <p>2.2.2. Removing Gills and guts</p> <p>2.2.3. Placing Fish parts</p> <p>2.3. Inspecting aside guts</p> <p>LO 3. Perform fish filleting</p> <p>3.1 Methods Fish Filleting</p> <p>3.2 Filleting equipment</p> <p>3.3 Inspecting aside fillets.</p> <p>3.4 Trimming fillets and removing bones.</p>	

<p>3.5 Removing and placing skin tissue</p> <p>3.6 Cutting portions</p> <p>3.7 Trimming steaks and cutlets.</p> <p>LO 4. Finalize gutting and filleting operation</p> <p>4.1. Gutted and filleted fish Storage instruction</p> <p>4.2. Labeling of gutted and filleted fish</p> <p>4.3. Rinsing and chilling fillets.</p> <p>4.4. Handling and disposing Wastes.</p> <p>4.5. Cleaning and storing tools, materials and equipment</p> <p>4.6. Food safety and hygiene regulations and procedure</p> <p>4.7. Record keeping and reporting</p>
<p>Learning Methods</p> <ul style="list-style-type: none"> • Lecture-discussion • Group discussion • Demonstration • Hands on exercise • Field visit
<p>Assessment Methods</p> <ul style="list-style-type: none"> • Interview/Written Test • Observation/Demonstration with Oral Questioning
<p>Assessment Criteria:</p> <p>LO 1. Prepare work area for gutting and filleting</p> <ul style="list-style-type: none"> • Contingency plans and loss minimization strategies are noted and allocations of labor and financial resources are confirmed with management. • Senior personnel are briefed on arrangements. • External specialists are briefed on management policies and priorities. • Budget requirements are considered and activated. • Equipment storage is monitored to ensure ready access and maintenance in working condition. • Suitable personal protective equipment (PPE) is selected and checked prior to use

LO2. Test contingency plans

- Contingency plans and loss minimization strategies are tested under simulated emergency conditions, performance analyzed and recommendations made to management on improvements

LO3. Manage loss minimization strategies

- Risk is identified and the appropriate emergency procedure is initiated.
- Proper handling of Stock and asset.
- Supervision of staff and equipment mobilization is in accordance with enterprise procedures.
- Equipment operation and work practices conform to occupational health and safety requirements.
- Reports and observations are accurately recorded on data sheets and conveyed in accordance with enterprise procedures.

LO4. Clean up and review

- Equipment is cleaned, repaired and stored in accordance with enterprise procedures.
- Lost stock and assets are replaced; damages are repaired quickly and efficiently.
- De-brief is undertaken with all staff to assess performance of the emergency procedure, recommendations analyzed and enterprise procedures adjusted as appropriate

Module Code and Title:	AGR FAQ2 M07 1122 Applying 5S Procedures
NOMINAL DURATION:	45 hours
MODULE DESCRIPTION : This module covers the knowledge, skills and attitude required to apply 5S techniques to his/her workplace. 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>LEARNING OUTCOMES</p> <p>At the end of the module the trainee will be able to:</p> <p>LO1. Prepare for work</p> <p>LO2. Sort items.</p> <p>LO3. Set all items in order.</p> <p>LO4. Perform shine activities.</p> <p>LO5. Standardize 5S.</p> <p>LO6. Sustain 5S.</p>	
<p>MODULE CONTENTS:</p> <p>LO1. Prepare for Work</p> <p>1.1. Using work instructions</p> <p>1.2. Reading and interpreting job specifications</p> <p>1.3. Observing OHS requirements</p> <p>1.4. Preparing and using equipment</p> <p>1.5. Identifying and checking safety equipment and tools</p> <p>1.6. Preparing and using kaizen Board</p> <p>LO2. Sort Items</p> <p>2.1 Preparing plan</p> <p>2.2 Performing cleaning activities</p> <p>2.3 Identifying all items in the workplace</p> <p>2.3.1. Tools</p> <p>2.3.2. Jigs/Fixtures</p> <p>2.3.3. Materials/components</p> <p>2.3.4. Machine and equipment</p> <p>2.3.5. Manuals</p> <p>2.3.6. Documents</p> <p>2.4 Listing necessary and unnecessary items</p>	

- 2.5 Using Red tag strategy
- 2.6 Evaluating and placing unnecessary items
- 2.7 Recording and quantifying necessary items
- 2.8 Reporting performance results
- 2.9 Checking the necessary items

LO3. Set All Items in Order

- 3.1 Preparing plan.
- 3.2 Performing cleaning activities
- 3.3 Deciding location/layout, storage and indication methods
- 3.4 Preparing and using necessary tools and equipment.
- 3.5 Placing items in their assigned locations
- 3.6 Returning the items after use
- 3.7 Reporting performance results
- 3.8 Checking each item regularly

LO4. Perform Shine Activities.

- 4.1 Preparing plan
- 4.2 Preparing and using necessary tools and equipment
- 4.3 Implementing shine activity
- 4.4 Reporting performance results.
- 4.5. Conducting regular shining activities.

LO5. Standardize.

- 5.1. Preparing and using plan.
- 5.2. Preparing and implementing tools and techniques
- 5.3. Following checklists and report
- 5.4. Keeping workplace
- 5.5. Avoiding the problems

LO6. Sustain.

- 6.1. Preparing and following plan
- 6.2. Discussing, preparing and implementing tools and techniques
- 6.3. Inspecting the workplace specified standard
- 6.4. Cleaning up workplace
- 6.5. Identifying the situations and actions specified
- 6.6. Recommending improvements
- 6.7. Following checklists

6.8. Avoiding problems by sustaining activities.

Learning Methods

- Lecture and Discussion
- Demonstration
- Simulation
- Roleplaying

Assessment Methods

- Written test with Oral questioning
- Practical demonstration

Assessment Criteria:

LO1. Prepare for work

- The 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.
- Tools and equipment are prepared and used to implement 5S.
- Safety equipment and tools are identified and checked for safe and effective operation.
- Kaizen Board (Visual Management Board) is prepared and used in harmony with different workplace contexts.

LO.2 Sort items

- Plan is prepared to implement sorting activities.
- Cleaning activities are performed.
- All items in the workplace are identified following the appropriate procedures.
- Necessary and unnecessary items are listed using the appropriate format.
- Red tag strategy is used for unnecessary items.
- Unnecessary items are evaluated and placed in an appropriate place other than the workplace.
- Necessary items are recorded and quantified using appropriate format.
- Performance results are reported using appropriate formats.
- Necessary items are regularly checked in the workplace.

LO.3 Set all items in order

- Plan is prepared to implement set in order activities.

- General cleaning activities are performed.
- Location/Layout, storage and indication methods for items are decided.
- Necessary tools and equipment are prepared and used for setting in order activities.
- Items are placed in their assigned locations.
- After use, the items are immediately returned to their assigned locations.
- Performance results are reported using appropriate formats.
- Each item is regularly checked in its assigned location and order.

LO.4 Perform shine activities

- Plan is prepared to implement shine activities.
- Necessary tools and equipment are prepared and used for shining activities.
- Shine activity is implemented using appropriate procedures.
- Performance results are reported using appropriate formats.
- Regular shining activities are conducted.

LO5. Standardize 5S

- Plan is prepared and used to standardize 5S activities.
- Tools and techniques to standardize 5S are prepared and implemented based on relevant procedures.
- Checklists are followed for standardize activities and reported to relevant personnel.
- The workplace is kept to the specified standard.
- Problems are avoided by standardizing activities.

LO6. Sustain 5S

- Plan is prepared and followed to sustain 5S activities.
- Tools and techniques to sustain 5S are discussed, prepared and implemented based on relevant procedures.
- Workplace is inspected regularly for compliance to specified standard and sustainability of 5S techniques.
- Workplace is cleaned up after completion of job and before commencing next job or end of shift.
- Situations are identified where compliance to standards is unlikely and actions specified in procedures are taken.
- Improvements are recommended to lift the level of compliance in the workplace.
- Checklists are followed to sustain activities and report to relevant personnel.
- Problems are avoided by sustaining activities.

Module Code and Title:	AGR FAQ2 M08 1122 Implementing Agribusiness Marketing
NOMINAL DURATION:	40 hours
MODULE DESCRIPTION : This module covers the knowledge, skills and attitude required to Understand concept of agricultural marketing Understand concepts of agribusiness Identify marketing targets for Agricultural products Implement marketing strategy. Establish contract farming, and Apply Agricultural marketing services.	
LEARNING OUTCOMES	
At the end of the module the trainee will be able to:	
LO1. Understand concept of agricultural marketing	
LO2. Understand concepts of agribusiness	
LO3. Identify marketing targets for Agricultural products	
LO4. Implement marketing strategy	
LO5. Establish contract farming	
LO6. Apply Agricultural marketing services	
MODULE CONTENTS:	
LO1. Understand concept of agricultural marketing	
1.1. Concept of agricultural marketing	
1.2. Importance of agricultural marketing	
1.3. Roles of agricultural market	
1.4. Principles of agricultural marketing	
1.5. Marketing mix	
1.6. Types of market structure	
LO2. Understand concepts of agribusiness	
2.1. Concept of agribusiness	
2.2. Importance of agribusiness	
2.3. Roles of agribusiness	
2.4. Principles And Characteristic of agribusiness	
2.5. Dimension and structures of Agribusiness	
LO3. Identify marketing targets for agricultural products	
3.1 Marketing strategy	
3.2 Approaches of agricultural market	
3.3 Market Segment descriptors	

3.4 Agricultural marketing options

3.5 Marketing plan

3.6 Analyzing cost and benefit

LO4. Implement marketing strategy

4.1 Agricultural marketing functions strategy

4.2 Preparing marketing Action plan

4.3 Resource for agricultural marketing

LO 5. Establish contract farming

5.1. Concept of contract farming

5.2. Types of contract farming

5.3. Models of Contract farming

5.4. Steps and procedures of contract farming

5.5. Contract farming requirements

5.6. Contract farming systems

LO6. Apply agricultural marketing services

6.1. Types of Agricultural products

6.2. Conducting Need assessment

6.3. Develop Market strategies

Learning Methods:

- Lecture and Discussion
- Demonstration
- Simulation
- Roleplaying

Assessment Methods:

- Written test with Oral questioning
- Practical demonstration
- Project

Assessment Criteria:

LO.1 Create awareness about cooperative

- Concept of agricultural marketing is understood for Agricultural marketing
- Importance of agricultural marketing is understood to provide agricultural marketing services

- Roles of agricultural market-oriented service is identified and understood
- Principles of agricultural marketing and strategies are identified and understood
- Marketing mix is understood to implement agricultural marketing activities
- Types of marketing are understood and identified to implement the appropriate marketing services

LO. 2. Understand concepts of agribusiness

- Concept of agribusiness is understood for Agricultural marketing
- Importance of agribusiness is understood to provide agribusiness services
- Roles of agribusiness-oriented service is identified and understood
- Principles of agribusiness and strategies are identified and understood
- Characteristic of Agribusiness are understood to implement Agribusiness
- Dimension and structures of Agribusiness are understood and distinguished

LO.3. Identify marketing targets for agricultural products

- Marketing targets are identified for Agricultural products and services
- Approaches of agricultural market are understood for agricultural market product and service
- Segment descriptors are used to display the targets of agricultural market
- Strategic of agricultural marketing options are identified to develop agricultural marketing plan
- Business plans are prepared to perform cost and benefit analysis.

LO.4 Implement marketing strategy

- Agricultural marketing functions strategy is designed to perform agriculture business.
- Action plan is developed to implement Agricultural marketing strategies.
- Require resource are identified and coordinated to implement agricultural marketing
- Marketing mix is implemented according to the strategy Agricultural.

LO. 5. Establish contract farming

- Concept of contract farming
- Types of contract farming
- Models of Contract farming
- Steps and procedures of contract farming establishments
- Contract farming requirements
- Contract farming systems

Module Code and Title:	AGR FAQ2 M09 1122 Applying Basics of Human Nutrition Practices
NOMINAL DURATION:	48 hours
MODULE DESCRIPTION: This module covers the knowledge, skill and attitude required to categorize agricultural foods items, recognize malnutrition in the community, identify the role of agriculture in nutrition and contribute to the awareness creation of the community in utilization of agricultural products.	
LEARNING OUTCOMES	
At the end of the module the trainee will be able to:	
LO1. Identify Categories of agricultural foods items	
LO2. Recognize malnutrition in the community	
LO3. Identify the role of agriculture in nutrition	
LO4. Demonstrate diversified Agricultural food production and consumption techniques	
LO5. Perform proper handling and storage of agricultural food products	
LO6. Document and report food production, consumption and difficulties	

MODULE CONTENTS:

LO.1: Identify Categories of agricultural foods items

- 1.1. Basic terminologies and concepts in nutrition
- 1.2. Identifying and explaining food sources, their categories and nutritional content
- 1.3. Identification of Energy dense and nutrient dense food stuffs

LO.2 : Recognize malnutrition in the community

- 2.1 Physical signs of malnutrition
- 2.2 Forms, causes and consequences of malnutrition in the community
- 2.3 Identifying measures taken in maintaining and promoting balanced diet
- 2.4 Recognizing contributions done to create community awareness

LO.3: Identify the role of agriculture in nutrition

- 3.1. The role of agriculture as source of variety foods
- 3.2. Agricultural sector in nutrition sensitive intervention
- 3.3. Identifying nutrition sensitive agricultural practices

LO.4: Demonstrate diversified Agricultural food production and consumption techniques

- 4.1. The importance of diet diversification
- 4.2. Techniques of diversifying food production
- 4.3. Implementing the techniques of enhancing nutrient content
- 4.4. Cooking techniques for specific agricultural products
- 4.5. Preparation of balanced and nutrient dense diet

LO5: Perform proper handling and storage of agricultural food products

- 5.1. Importance of hygiene for nutrition
- 5.2. Construction of food storage facilities
- 5.3. Methods for Safe handling and storage of agricultural products
- 5.4. Demonstration of Safe handling and storage of agricultural products

LO6: Document and report food production, consumption and difficulties

- 6.1. Documenting diversified food production and consumption activities
- 6.2. Reporting difficulties in production and consumption of diversified agricultural food products

Learning Methods:

- Brainstorming
- Answer and questioning
- Lecture and Discussion
- Demonstration
- Field visits
- Audio Visual
- Project work

Assessment Methods:

- Written test
- Oral questioning
- Practical demonstration
- Project work

Assessment Criteria:

LO.1: Identify Categories of agricultural foods items

- Basic terminologies and concepts in nutrition are identified and explained
- Food groups, nutrient and their sources of balanced diet are identified and explained
- Origin and composition of food stuffs are identified and described
- Energy dense and nutrient dense food sources are identified and explained

LO.2: Recognize malnutrition in the community

- Physical signs of malnutrition are identified and explained
- Forms, causes and consequences of malnutrition in different groups of community are identified
- Measures to overcome malnutrition, importance of maintenance of adequate and balanced diet are promoted
- Contribution is made in elders, family heads and women awareness creation programs

LO.3: Identify the role of agriculture in nutrition

- The role of agriculture as source of variety foods is recognized and promoted
- The contribution of agriculture sector in nutrition sensitive intervention is described
- Nutrition sensitive agricultural practices are identified and communicated as per the nutrition program guideline

LO.4: Demonstrate diversified Agricultural food production and consumption techniques

- Importance of diet diversification is identified and discussed with family holds and community according to the program guideline
- Techniques of diversified food production are identified and demonstrated to farmers and family members
- Techniques of enhancing the nutrient content of family foods are assessed and implemented according to the program guideline and cultural requirements of the rural community
- Utensils are identified and cooking techniques demonstrated for specific agricultural products
- PPE are selected and used in accordance to OHS requirement and code of ethics
- Balanced and nutrient dense diet preparation is demonstrated using food stuff ingredients

LO.5: Perform proper handling and storage of agricultural food products

- Importance of hygiene for nutrition is explained
- Storage facilities are identified and family holds supported in construction.
- Agricultural products are safely handled and stored
- Methods and techniques of safely handling and storing agricultural products are demonstrated in accordance products requirement

LO.6: Document and report food production, consumption and difficulties

- Diversified food production and consumption activities are documented
- Difficulties happened in the processes are reported to the respective authorities

3. Resource Requirements

Item No.	Category/Item	Description/ Specifications	Quantity	Recommended Ratio (Item: Trainee)
1.	Learning Materials			
1.1	TTLM	Prepared by the trainer	25	1:1
2.	Reference Books			
2.1	Training Manual on Improved Fish Handling and Preservation Techniques	(UNIDO,2015)	5	1:5
2.2	Fisheries and Aquaculture	Abebe Getahun, 2013. AA university	5	1:5
2.3	Consumption of fish and fishery products.	FAO. 2020b. www.fao.org/fishery/statistics/globalconsumption/en	5	1:5
2.4	Fish farming Handbook	Southeast Asian Fisheries Development Center. (1980).	5	1:5
2.4	Fish processing sustainability and new opportunity	George M. Hall <i>et al</i> , (2012)	5	1:5
2.5	Infectious disease in aquaculture prevention and control	C. J. Secombes <i>et al</i> . (2012)	5	1:5
2.6	Sustainable aquaculture techniques	Krishna R. Salin <i>et al</i> . (2014)	5	1:5
2.7	Trends in fish processing technologies	Javier Borderías <i>et al</i> , (2018)	5	1:5
2.8	Water quality requirements and management strategies for fish farming	Warish Khan, Adil Masood (2017)	5	1:5
2.9	Waste water management through aquaculture	B.B. Jana and R.N. Mandal (2018)	5	1:5
3.	Learning Facilities & Infrastructure			
3.1	Class room	5*10m	1	1:25
3.2	Clinic/first aid provision area	6*8m	1	1:25
3.3	Library	5*7.5m	1	1:25

3.4	Simulation room for assessment	3*5m	1	1:25
3.5	Demonstration site	5*10m	1	1:25
3.6	Laboratory	5*10m	1	1:25
3.7	Work shop	9*4m	1	1:25
3.8	Audiovisual room	5*10m	1	1:25
3.9	ICT room	7*9m	1	1:25
3.10	White board	1.2*1.8m	1	1:25
3.11	Black board	1.2*2m	1	1:25
3.12	Chalk	Dubai	1 Packet	1:25
3.13	Marker	Permanent and non-permanent	2 Packet	1:13
3.14	A3 paper	Double A Stationary A4 paper	25 Packet	1:1
3.15	A4 paper	Double A Stationary A4 paper	25 Packet	1:1
3.16	Fixer with lid	HB/1.5 mm	25 Packet	1:1
3.17	Stencils	Ball point	10 Pcs	1:3
3.18	Toner	HP	As needed, 10 pieces	1:3
3.19	Fastener	ACCO two-piece paper fasteners	As needed, 50 pieces	2:1
3.20	UTP cable	Cat5E UTP cable	2 boxes	1:13
3.21	Notice board	900 mm x 600 mm Heavy duty wooden	1	1:25
3.22	Green board	China Magnetic Green Board	1	1:25
3.23	T-square	Aluminum metal type	25	1:1
3.24	Flip chart	Sinar Line	1	1:25
3.25	Graph paper	Roll	5	1:5
3.26	pencil	HB	5	1:5
3.27	Drawings with specifications	Any suitable drawing	5	1:5
3.28	Ruler	Mica 30 cm	25	1:1
3.29	Eraser	Standard	1	1:25
3.30	Duster	Wooden made	1	1:25
3.31	Computer	Desktop	25 Pcs	1:1
3.32	Computer table	1*2m	13 Pcs	1:2

3.33	LCD projector	EB-2250U HDMI/USB/LAN	1	1:25
3.34	Laptop	Core i7, RAM 8, storag1TB	1	1:25
3.35	Fish pond	10*20m	1	1:25
4.	Consumable Materials			
4.1	Fish feed	<ul style="list-style-type: none"> • Natural feed (• Artificial (5	1:5
4.2.	Fertilizer	Organic and inorganic fertilizer (250kg/ha)	5	1:5
4.3	Limestone	250kg /ha	5	1:5
4.4	Alcohol	Spray awesome spray bottle	5L	1:5
4.5				
4.6.	Overall	Made from canvas or kaki cloth	25	1:1
4.7	Raincoat	100% water proof	25	1:1
4.6	Wader	Chest Waders	25	1:1
4.9	Gloves	Made from Synthetic rubber	25	1:1
4.10	Life saver jacket	<ul style="list-style-type: none"> • Material: Nylon+TPU and • Buoyancy: 85N/150N/275N 	25	1:1
4.11	Helmets	<ul style="list-style-type: none"> • Material: ABS+EPS • Top shell material: ABS • oven tape: Nylon 	25	1:1
4.12	Aprons	<ul style="list-style-type: none"> • Fabric: Polyester, Nonwoven, Cotton • Material: Cotton • Style: Sleeveless 	1	1:25
4.13	Plastic boots	Plastic made or rubber of different size	25	1:1
4.14	Nose protector	<ul style="list-style-type: none"> • Material: PP, Meltblown, Non-woven • Size: 21*8cm • Filter Rating: 98% - 99.9% • Type: medical mask 	25	1:1
4.15	Face mask	better bacteria filtration and air	25	1:1

		permeability		
4.16	Aprons	<ul style="list-style-type: none"> Fabric: Polyester, Nonwoven, Cotton Material: Cotton Style: Sleeveless 	1	1:25
	Plastic boots	Plastic made or rubber of different size	25	1:1
5.	<i>Tools and Equipment's</i>			
5.1.	Fishing Rod and Reel	Smallest	5	1:5
5.2.	Long Line hooks	Smallest	5	1:5
5.3.	Bait	Moose, insects, worms, lights	5	1:5
5.4.	Bobbers/ Floater	Plastic	5	1:5
5.5.	Inboard and out board boat	Iron, timber and plastic	5	1:5
5.6.	Fish container	Plastic, Ammonium, stillness still	5	1:5
5.7.	Sechi Disc	Plastic	2	1:13
5.8.	fish filleting troughs	Plastic or stainless steel, timber	5	1:5
5.9.	Filleting knives	Metal, stainless steel	5	1:5
5.10.	Fish cleaning/gutting machine	Type: Cutting machine Automatic Grade: Automatic Production Capacity: 40~60 pcs/minute Size: 1300*750*1280mm; Customized	5	1:5
5.11.	Cleaning/gutting knives	Metal, stainless steel	5	1:5
5.12.	Deboning knives	Metal, stainless steel	5	1:5
5.13.	Fish filleting machine	Type: Cutter Production Capacity: 35-40pcs/min Dimension(L*W*H): 1550x750x1350mm	5	1:5
5.14.	Cleaning/gutting and filleting table	Timber, marble and plastic	5	1:5
5.15.	Fish boxes and tubs	Plastic, aluminum, stainless steel	5	1:5
5.16.	Dissolved Oxygen Meter	type: Dissolved Oxygen Meter Resolution: 0.01mg/L Data Recording:	5	1:5

		14000 historical data Dimension: 144*144*120mm		
5.17.	Trays	Plastic, aluminum, stainless steel	5	1:5
5.18.	Boat	Metal, timber, plastic fiber	5	1:5
5.19.	Nets.	Scoop net, dragging net, trap net and casting net gillnet Beach seines	5	1:5
5.20.	Trucks,	Holding and on-farm transport equipment:	5	1:5
5.21.	Fishing lines	Nylon	5	1:5
5.22.	Flow traps	35/41/56cm Useful Portable Long Handle	5	1:5
5.23.	Hand lines	1.0mm/1.2mm/1.4mm fishing line	5	1:5
5.24.	Bins	Plastic	5	1:5
5.25.	Troughs	Standard/concrete or stainless	5	1:5
5.26.	Tanks	Fiber tanks	5	1:5
5.27.	Twine	Nylon	5	1:5
5.28.	Lures	Fishing Lures,5pcs 3cm 3D Holographic Eyes Mini Fishing Lures Floating Micro Bass Bait Crankbait Treble Hook	5	1:5
5.29.	Sinkers	Lead Fishing Weights, 20Pcs Streamlined Fishing Weight Sinkers (10g/ 20g)	5	1:5
5.30.	Swivels	Fishing Rolling Swivel High Strength Full Stainless Steel Swivels Black Nickle Rolling Solid Rings Tackle Fishing Connectors Fishing Swivel Carp Fishing Test 30LB-1322LB	5	1:5
5.31.	Litmus paper	<ul style="list-style-type: none"> Balacoo PH Test Paper Strips Tearable Fish Tank Aquarium PH Paper 	5	1:5

		<ul style="list-style-type: none"> Product Dimensions 12 x 12 x 3 cm; 50 Grams 		
5.32.	Band saw	<p>Name: vertical band saw</p> <p>Table size (mm): 570*500mm</p> <p>Saw Blade diameter: 450mm</p> <p>Maximum tilt table: 45°</p> <p>Wire-speed saw blade: 1800m/min</p> <p>Installed power: 2.2kw</p> <p>Saw circumference: 3550mm</p>	5	1:5
5.33.	Needle	Plastic, wooden and stainless	5	1:5
5.34.	Hooks	Stainless/iron	5	1:5
5.35.	Ropes	head rope equipped with floats and foot rope equipped with sinkers	5	1:5
5.36.	Shovel	(Africa shovel steel round shovel)	5	1:5
5.37.	Sack	(Polypropylene Woven Sack)	5	1:5
5.38.	Barrel	(Powder-Coated Steel Barrel)	5	1:5
5.39.	Weight balance	(electronic platform digital weighing scale with railing)	5	1:5
5.40.	Feeding machine	(AF-2019B Factory direct sales automatic feeder fish feeder is suitable for fish)	5	1:5
5.41.	Wheelbarrow	KSEIBI High Quality Heavy Duty Wheel Barrow For Moving Materials)	5	1:5
5.42.	Basket	(Stainless Steel Wire Mesh Baskets, metal basket, wire baskets)	5	1:5
5.43.	Ice boxes	<ul style="list-style-type: none"> Material: PE Outer + PP Inner + PU Foaming Feature: Waterproof, insulated Capacity: 65L 	5	1:5
5.44.	Air pumper	6V 12V 24V Air Pump/ Diaphragm Mini Air Pump	5	1:5

5.45.	Ph Meter	<ul style="list-style-type: none"> • Working voltage: 220V±22V,50Hz±0.5Hz • Temperature range: 0-99.9° • Measuring range: 0-14pH • Accuracy:±0.05 • Working condition: • Ambient temperature:0~60°C 	5	1:5
5.46.	Aquarium	Mini Aquarium Accessories Coffee Table Saltwater Marine Desktop Aquarium Custom Acrylic Fish Tank For Sale	5	1:5

4. Developers Profile

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5. Coordinators profile

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