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Commissioner for Education

AQUACULTURE AND FISH PROCESSING SYLLABUS FOR ORDINARY SECONDARY EDUCATION VOCATIONAL STREAM FORM I–IV

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Abbreviations and Acronyms

VETA	Vocational Education and Training Authority
NGOs	Non-Governmental Organizations
SOP	Standard Operating Procedure
PPE	Personal Protective Equipment
ICT	Information and Communication Technology
HACCP	Hazard Analysis and Critical Control Points
EEZ	Exclusive Economic Zone

Definition of Key terms

Assessment: The process of collecting evidence and making judgments on whether competence has been achieved, or whether specific skills and knowledge have been achieved that will lead to the attainment of competence

Circumstantial knowledge: Detailed knowledge that allows decision-making regarding different circumstances and cross-cutting issues.

Competence: The ability to use knowledge, understanding, practical, and thinking skills to perform effectively to the workplace standards required in employment.

Element: A sub-unit (step), which reflects a learning sequence with the aim of achieving broad learning objectives of a unit

Performance criteria: Indicate the expected end results or outcome in the form of evaluative statements.

Standard: A *set* of statements, which if proved true under working conditions, mean that an individual is meeting an expected level and type of performance

Unit: A statement of broad learning objectives prescribing the requirements of a standard in the form of practical skills, knowledge, and appropriate attitudes.

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For and on behalf of:

Vocational Education and Training Authority



CPA. Anthony M. Kasore

DIRECTOR GENERAL

1.0 Introduction

Aquaculture and Fish Processing is one of the key occupations taught in the Ordinary Secondary Education Vocational Stream. This subject is essential due to the growing demand for nutritious fish protein, the need to sustainably manage aquaculture operations, and the increasing contribution of fish farming and processing to Tanzania's economy and food systems. As the country advances its commitment to the blue economy, technological innovation, and sustainable development, building youth capacity in aquaculture and fish processing is more critical than ever.

Students studying this subject gain both theoretical understanding and practical competencies in fish breeding, pond and hatchery management, water quality control, disease prevention, harvesting, processing, preservation, and marketing. The integration of modern technology, such as water quality monitoring tools, digital data recording systems, automatic feeders, and hygienic processing equipment, ensures learners are equipped with skills that match the evolving demands of the aquaculture and fish processing industry.
The syllabus also emphasizes environmental sustainability, ensuring that students are trained to adopt eco-friendly aquaculture practices, minimize post-harvest losses, preserve natural water bodies, and reduce pollution and waste from processing activities. By doing so, learners are not only prepared to support livelihoods but also become stewards of aquatic ecosystems, contributing to the preservation of marine and inland water resources.

Graduates of this program are equipped to find employment in public and private sectors, including government aquaculture departments, hatcheries, fish farms, processing and packaging enterprises, research centers, and NGOs focused on sustainable food production.

The Aquaculture and Fish processing Syllabus is structured to develop competence-based learning that is hands-on, technology-enhanced, industry-relevant, and aligned with Tanzania's development goals. It provides clear guidance for teaching, learning, and assessment, ensuring that students are well-prepared to contribute to national goals related to food production, sustainable resource use, and economic resilience through the aquaculture and fish processing sector.

2.0 Main Objectives of Education in Tanzania

The main objectives of education in Tanzania are to enable every Tanzanian to:

(a) Develop and improve his or he personality so that he or she values himself or herself and develops self-confidence;

(b) Respect the culture, traditions, norms, and customs of Tanzania; cultural differences; dignity; human rights; attitudes and inclusive actions;

(c) Advance knowledge and apply science and technology, creativity, critical thinking, innovation, cooperation, communication, and positive attitudes for his or her own development and the sustainable development of the nation and the world at large;

(d) Understand and protect national values, including dignity, patriotism, integrity, unity, transparency, honesty, accountability, and the nation language;

(e) Develop life and work-related skills to increase efficiency in everyday life;

(f) Develop a habit of loving and valuing work to increase productivity and efficiency in production and service provision;

(g) Identify and consider cross-cutting issues, including the health and well-being of society, gender equality, as well as the management and sustainable conservation of the environment; and

(h) Develop national and international cooperation, peace, and justice per the Constitution of the United Republic of Tanzania and international conventions.

3.0 General Competencies for Ordinary Secondary Education Vocational Stream

General Competencies for Ordinary Secondary Education Vocational Stream

The general competences for Ordinary Secondary Education, Form 1–IV, Vocational Education Stream are to:

(a) Apply knowledge, skills, and attitudes the student developed in the primary school stage to increase his/her understanding of technical skills;

(b) Apply technical skills in designing, inventing, and making various things to cope with life and solve challenges in society;

(c) Appreciate citizenship and national virtues;

(d) Use language skills;

(e) Demonstrate self-confidence in learning in various fields, including science and technology, technical knowledge, and technical skills;

(f) Apply the technical knowledge and skills in designing, discovering, and making various things to solve challenges in society, including cross-cutting issues;

(g) Appreciate procedures and safety rules in using technical tools correctly; and

(h) Apply the technical knowledge and skills acquired to develop oneself with vocational and technical education and join the workforce.

4.0 General Competences of the Occupation

Upon successful completion of this occupation, students will be competent to:

(a) Plan, establish, and effectively manage sustainable fish farming systems that optimize productivity and resources.

(b) Monitor, evaluate, and maintain optimal water quality and aquatic environmental conditions for healthy fish growth.

(c) Apply best practices in fish breeding, health management, disease diagnosis, and control to ensure fish welfare.

(d) Conduct harvesting, processing, preservation, and marketing of fish and fish products following quality standards.

(e) Implement strategies for the preservation and sustainable use of natural water bodies and aquatic ecosystems.

(f) Adhere to occupational safety, hygiene, and environmental conservation principles during aquaculture operations.

(g) Align management of aquaculture and fisheries resources with national blue economy initiatives and sustainable development goals.

(h) Utilize and maintain appropriate tools, equipment, and technologies in aquaculture and fisheries activities.

5.0 Main and Specific Competences

The main and specific competences to be developed are presented in Table 1.

Table 1: *Main and Specific Competences for Form I–IV*

Modules (Main Competence)	**Units (Specific competences)**
1.0. Ensuring Occupational Safety and Hygiene	1.1. Maintaining safety in aquaculture and fisheries operations 1.2. Applying hygiene and sanitation in fish handling and processing
2.0. Managing Aquaculture Systems	2.1. Preparing fishponds and hatchery

Modules (Main Competence)	Units (Specific competences)
	structures 2.2. Managing water quality and aquatic conditions 2.3. Breeding and hatching fingerlings
3.0. Handling and Processing Fish Products	3.1. Harvesting and grading fish 3.2. Processing and preserving fish products 3.3. Maintaining cold chain and dried fish storage
4.0. Managing Fish Health	4.1. Diagnosing and treating fish diseases 4.2. Administering drugs and isolate sick fish
5.0. Managing Fisheries Facilities and Equipment	5.1. Maintaining hatchery and pond systems 5.2. Maintaining cooling systems and kilns 5.3. Maintaining fishing and aquaculture tools and equipment
6.0. Stocking and Fingerling Management	6.1. Preparing and pack fingerlings for stocking 6.2. Transporting and stock fingerlings
7.0. Managing Records and Marketing Activities	7.1. Keeping records of production and stock 7.2. Marketing fish and fish products
8.0. Managing Aquaculture Projects	8.1. Preparing fishery projects 8.2. Executing planned aquaculture activities

6.0 The Roles of Teachers, Students and Parents in Teaching and Learning

The Roles of Teachers, Students and Parents in Teaching and Learning

Good relationships between a teacher, student, and parent are fundamental to ensuring successful learning. This section outlines the roles of each participant in facilitating effective teaching and learning on Aquaculture and Fish Processing.

6.1 The teacher

The teacher is expected to:

a) Help the student to learn and develop the intended competences in Aquaculture and Fish Processing;
b) Use teaching and learning approaches that will allow students with different needs and abilities to:
    i) Develop the competences needed in the 21st Century
    ii) Actively participate in the teaching and learning process
c) Use student-centered instructional strategies that make the student the center of learning which allow them to think, reflect and search for information from various sources;
d) Create a friendly teaching and learning environment;
e) Prepare and improvise teaching and learning resources;
f) Conduct formative assessment regularly by using tools and methods that assess theory and practice;
g) Treat all the students according to their learning needs and abilities;
h) Protect the student from the risky environment while he or she is at school;
i) Keep track of the student's daily progress;
j) Identify individual student's needs and provide the proper intervention;
k) Involve parents/guardians and the society at large in the student's learning process;
l) Integrate cross-cutting issues and ICT in the teaching and learning process.

6.2 The student

The student is expected to:

a) Develop the intended competences by participating actively in various learning activities inside and outside the classroom;
b) Participate in the search for knowledge from various sources, including textbooks, reference books and other publications in online libraries.

6.3 The parent/guardian

The Parents/Guardian is expected to:

a) Monitor the child's academic progress;
b) Where possible, provide the child with the needed academic support;
c) Provide the child with a safe and friendly home environment conducive to learning;
d) Keep track of a child's progress in behavior

e) Provide the child with any necessary materials required in the learning process; and
f) Install in the child a sense of commitment and positive value towards education and work.

7.0 Teaching and Learning Methods

The teaching and learning methods are instrumental in developing students' competences. This Syllabus suggests teaching and learning methods for each activity which include but not limited to demonstrations, practical/hands-on activities, observations, role play, simulation, group work, peer teaching/learning, discussions, presentations, field visits, research, and project works. However, a teacher is advised to plan and use other appropriate methods based on the environment or context. All the teaching and learning methods should be integrated with the everyday lives of students. The focus is expected to be on practical application and developing cognitive, affective, and psychomotor skills through learner-centred methods. Vocational teachers act as facilitators, incorporating both school-based teaching and project work supervision.

8.0 Teaching and Learning Resources

The process of teaching and learning requires different resources. In that regard, both teachers and students should work together to collect or improvise alternative resources available in the school and home environment when needed. Teachers and students are expected to continually seek information from various sources to effectively facilitate the teaching and learning process. The list of approved textbooks and reference books shall be provided by the Tanzania Institute of Education (TIE).

9.0 Assessment

Assessment is important in the teaching and learning of Aquaculture. It is divided into formative and summative assessments. Formative assessment informs both the teacher and students about the progress of teaching and learning and helps in making decisions to improve the teaching and learning process. Teachers are, therefore, expected to use a wide range of formative assessment methods which include, but are not limited to, demonstration, discussions, presentations, oral questions, experiments, observations, practical assignments and projects.

Summative assessment, on the other hand, will focus on determining students' achievements of learning. Teachers are expected to use a variety of summative assessments, including the Form Two National Assessment, terminal examinations, annual examinations, mock examinations and project. The scores obtained from these assessments will contribute to Continuous Assessment (CA). Therefore, the Continuous Assessments shall account for 60% of the final score, and the National Form IV Examination will contribute 40%, as indicated in Table 2.

Table 2: *Contribution of Continuous Assessment and National Examination to the Final Score*

Assessment Category	**Weight (%)**	
	CA	**National Examination**
Form Two National Assessment (FTNA)	6.0	
Form Three Terminal Examination	5.0	
Form Three Annual Examination	5.0	
Form Four Mock Examination	7.0	
Project	7.0	
Form Two Practical	10.0	**40.0**
Form Three Practical	10.0	
Form Four Practical	10.0	
Total	**60.0**	

10.0 Project Work

Project work is a carefully planned and clearly defined task or problem that a student undertakes, either alone or in a group, to enhance and apply the skills and knowledge gained in the classroom, workshop, or laboratory. It is based on the principles of "Learning by Doing" and "Learning by Living." In this context, the implementation of Project Work in secondary schools' vocational streams is essential. Projects in the vocational stream should be conducted in the core subject (occupation). To ensure its success, the supervision and assessment of student project work must align with the guidelines provided by the National Examinations Council of Tanzania (NECTA).

11.0 Number of Periods

The Aquaculture and Fish Processing Syllabus for Ordinary Secondary Education Vocational Stream Form I–IV provides time estimates for teaching and learning each specific competence. The estimates consider the complexity of the specific competences and the learning activities. Eight (08) periods of 40 minutes each have been allocated per week, whereby two (02) periods will be used for theory and six (06) for practical sessions, which may require double periods (e.g., 80 minutes). Double periods allow sufficient time for hands-on activities.

12.0 Teaching and Learning Contents

The contents of the syllabus are organised into a matrix with seven (07) columns, which include main competences, specific competences, learning activities, suggested teaching and learning methods, assessment criteria (divided into process assessment, products/service assessment, and knowledge assessment), suggested teaching and learning resources, and the number of periods required, as presented in Tables 3 to 6

Form One

Table 3: *Detailed contents for Form One*

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
1.0 Maintaining fishery safety and environment	1.1 Administering fishery occupational health and safety	a) Describing concept of Aquaculture and Fish Processing as a subject (Meaning, importance and relationship with another related subject)	**Brainstorm:** Guide the students to brainstorm the concept of Aquaculture and Fish Processing as well as the importance of studying Aquaculture and Fish Processing		Fishery safety rule and regulation practiced as per recommended standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to	The following tools, equipment and safety gear are to be available:	25

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
		b) Adhering to fishery safety rules and regulations	fishery environment safety rules, the importance in preventing accidents and ensuring a safe working environment **Role-Play:** Assign students to explain fishery safety rules and regulations **Group Activity:**	• Organize tools equipment and safety gears • Use safety rules and regulation while in fishery activities • Perform different safety signs in fisheries • Maintain fishery safe working environment		Adhere to the fishery safety rules **Principles:** The student should explain principles of maintain fishery safety measures **Theories:** The student should explain: - • Different safety rules and regulation	• Safety gear (PPE) • Safety signs • Act, regulation and rules governing fishery activities	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Organize students into groups to interpret different safety signs in fisheries			for fishery activities **Circumstantial knowledge** **Detailed knowledge about:** • Fishery environment rules		
		c) Identifying lifesaving appliances	**Discussion:** Guide the students in having length conversation about lifesaving appliances	• Organize tools equipment and safety gears • Use lifesaving appliances	Lifesaving appliances identified according to required standard	**Knowledge evidence: Detailed knowledge of:** **Method used:** The student should explain how to	The following tools, equipment and safety gear are to be available: • Safety gear (PPE)	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Question & Answer: Give direct questions to students and receive answers on fishery safety rules and regulations	• Perform different safety signs in fisheries • Maintain fishery safe working environment		identify lifesaving appliances **Principles:** The student should explain principles of identification lifesaving appliances **Theories:** The student should explain: - • Different lifesaving appliances	• Safety signs	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						• Importance of proper using lifesaving appliances **Circumstantial knowledge** **Detailed knowledge about:** • OSHA rules and regulations • Fishery environment rules		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
		d) Maintaining aquaculture system general cleanliness	**Brainstorm:** Guide the students to brainstorm the meaning and identification of aquaculture system and infrastructures **Field trips and Industrial tours:** Lead students to visit aquaculture farms to lean about cleaning aquaculture system	• Organize tools equipment and safety gears • Clean aquaculture system • Adhere to fishery rules and regulations • Maintain fishery safe working environment	Aquaculture system cleanliness maintained according to the recommended standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to maintain cleanliness of fish processing facility **Principles:** The student should explain principles of maintaining general cleanliness	The following tools, equipment and safety gear are to be available: • Safety gear (PPE) • Dust bins • Cleaning materials • Dust covers	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Practical Work: Guide the students to conduct the general cleanliness of aquaculture facilities such as pond, tanks or cage			of aquaculture system **Theories:** The student should explain: - • How to maintain general cleanliness of aquaculture system • Effect of failure to clean		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						aquaculture systems **Circumstantial knowledge** **Detailed knowledge about:** Fishery environmental issues Measures against violation of fishery rules and regulations		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
		e) Maintaining fishery working environment	**Brainstorm:** Guide the students in describe the meaning of fishery working environment **Role-Play:** Assign students to: • Maintain fishery environment safety • Maintain personal safety	• Organize tools equipment and safety gears • Survey fishery working environment and determine essential features • Keep decks and workstations free from clutter, spills, and sharp tools • Ensure walkways are clear	Fishery working environment Maintain according to required standard	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to maintain fishery environment safety **Principles:** The student should explain principles of maintaining safe fishery working environment	The following tools, equipment and safety gear are to be available: • Safety gear (PPE) • Cleaning materials • Workshop shelf	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Group Activity: Organize students in groups and assign task to maintain fishery working environment	• Maintain fishery safe working environment • Store tools, equipment and safety gear		**Theories:** The student should explain: - • Procedures involved in maintaining fishery working environment **Circumstantial knowledge** **Detailed knowledge about:**		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						• Fishery rules and regulations • Reporting mechanisms for near-misses and hazards.		
		f) Maintaining personal safety	**Discussion:** Guide the students in having length conversation about personal safety **Demonstrations:**	• Organize tools equipment and safety gears • Manage causes of occupational health and safety hazards in fishery activities	Personal safety maintenance according to the recommended standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to	The following tools, equipment and safety gear are to be available: • Safety gear (PPE)	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Shows the correct fishery safety practices such as wearing life jacket which protect person while in fishery activities **Individual Assignment:** Assign student individually to explain the considerations considered during	• Set routine monitoring of occupational health and safety • Demonstrate safe fishery practice behavior • Store tools, equipment and safety gear		maintain personal safety **Principles:** The student should explain the principle of maintaining personal safety in working environment **Theories:** The student should explain: -		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			maintain personal safety			• Factors to consider in maintaining personal safety • Importance of weather and water condition. **Circumstantial knowledge** **Detailed knowledge about:**		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						• OSHA rules and regulations • Safe working practices • Awareness on fishing laws		
		g) Maintaining personal hygiene	**Brainstorm:** Guide the students to brainstorm the personal hygiene practices such as cleanliness **Discussion:**	• Organize tools and equipment required for personal hygiene • Manage effect of fail to manage personal hygiene	Personal hygiene maintained according to the required standard	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to maintain personal hygiene	The following tools, equipment and safety gear are to be available: • Hair cover • Hand gloves • Mouth cover	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Guide the students in having length conversation about personal hygiene	• Demonstrate safe fishery practice behavior • Store tools, equipment and safety gear		**Principles:** The student should explain principles of maintaining personal hygiene **Theories:** The student should explain: - • Properties of personal hygiene • Importance practicing	• Rain boot / Safety boot • Cleaning materials	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						safety and hygiene fishery **Circumstantial knowledge** **Detailed knowledge about:** • Safe working practices • Fishery environment rules		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
	1.2 Managing fishery accidents and incidents	a) Performing swimming	**Brainstorm:** Guide the students to describe meaning and methods of swimming **Discussion:** Guide the students in having length conversation about swimming styles **Demonstrations:**	• Organize tools equipment and safety gears • Practice physical exercise before swimming • Use swimming gears to avoid an accident • Use personal safety gear such as life jackets • Store tools, equipment and safety gear	Swimming performance according to required standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to perform swimming **Principles:** The student should explain principles of practicing different swimming methods	The following tools, equipment and safety gear are to be available: • Life jackets • First aid kit • Swim vests • Goggles • Swim cap • Reaching pole • Pool Alarm	40

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			show the process and precaution of swimming **Individual assignment:** Assign student individually to perform swimming			**Theories:** The student should explain: - • Importance practicing swimming • Advantages and disadvantages of different swimming methods **Circumstantial knowledge**		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Detailed knowledge about: Diving skills can assist drowned person safe working practices		
		b) Handling fishery physical / mechanical hazards	**Discussion:** Guide the students in having length conversation about fishery hazards	• Organize tools equipment and safety gears • Select physical / mechanical sources of hazard	Fishery physical / mechanical hazards managed as per required standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to	The following tools, equipment and safety gear are to be available: • Safety gears (PPE) • First aid kit	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Question & Answer: Give direct questions to students and receive answers on fishery physical hazard **Demonstrations:** Show the procedures to control fishery physical hazards	• Use procedures to control physical hazards • Store tools, equipment and safety gear		manage fishery physical hazards **Principles:** The student should explain principles of controlling fishery hazards **Theories:** The student should explain: - • Different fishery physical	• Netting and trap handling tools • Metal detectors	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						hazards and their control • Importance of controlling fishery physical hazards **Circumstantial knowledge** **Detailed knowledge about:** • Carefulness in handling hostile		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						/dangerous fish. • Fishery environment rules		
		c) Handling fishery chemical hazards	**Brainstorm:** Guide the students to define and identify fishery hazards **Question & Answer:** Give direct questions to students	• Organize tools equipment and safety gears • Select chemical sources of hazard • Select best way to overcome chemical hazard	Fishery chemical hazards managed as per required standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to: • Manage fishery	The following tools, equipment and safety gear are to be available: • Safety gear (PPE) • pH meter • Thermometer	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			and receive answers on fishery chemical hazards **Demonstrations:** Show the procedures on how to control fishery chemical hazards	• Manage fishery chemical hazards • Store tools, equipment and safety gear		chemical hazards **Principles:** The student should explain principles of controlling fishery chemical hazards **Theories:** The student should explain: - • How to control fishery	• Aerator • Reflactrometer • Test kits	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						chemical hazards • Sources of fishery chemical hazards. **Circumstantial knowledge** **Detailed knowledge about:** • OSHA rules and regulations • Safe working practices		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
		d) Handling biological hazards	**Brainstorm:** Guide the students to define and identify biological hazards **Group Discussion:** Organize students in small groups to discuss about biological hazards **Demonstrations:** Show the procedures and precaution to consider when control biological hazards	• Organize tools equipment and safety gears • Select biological sources of hazard • Select best way to overcome biological hazard • Manage biological fishery hazards • Store tools, equipment and safety gear	Fishery biological hazards managed as per required standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to manage biological fishery hazards **Principles:** The student should explain principles of controlling fishery biological hazards	The following tools, equipment and safety gear are to be available: • Microbiological Testing Kits • Safety gears (PPE) • Secch Disk • Cleaning materials • Food storage containers • DO meter	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Theories: The student should explain: - • Different types of biological hazards and their control • Importance of controlling biological hazards **Circumstantial knowledge**	• pH meter • Salinometer	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Detailed knowledge about: • OSHA rules and regulations • Safe working practices • Fishery environment rules		
		e) Performing lifesaving technics	**Discussion:** Guide the students in having length conversation about lifesaving technics	• Use different lifesaving technics • Practice different technics on saving drawn person	Lifesaving technics performed according to required standards	**Knowledge evidence: Detailed knowledge of: Method used:** The	The following tools, equipment and safety gear are to be available: • Life jackets	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Field trips and Industrial tours: Lead students to visit swimming area where lifesaving practice are done **Demonstrations:** show how to perform lifesaving technics such as first aid, using lifesaving gears such as life jackets or life ring	• Perform first aid to the injured person • Use lifesaving gears such as life jackets		student should explain how to: • Practice different lifesaving technics • Perform lifesaving technics to water drowned victim **Principles:** The student should explain principles	• Immersion suit • Thermal Protective Aids (TPA) • Signal devices • Life raft • Pyrotechnics • GPS	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Practical Work: Guide the students to conduct the lifesaving technics to a drawn or injured person from water			of performing lifesaving technics **Theories:** The student should explain: - • Different lifesaving techniques • Factors to consider in performing lifesaving technics		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Circumstantial knowledge **Detailed knowledge about:** • Safe working practices • Diving skills can assist drowned person		
		f) Performing signals communication	**Brainstorm:** Guide the students in defining and identification of	• Organize tools and equipment used in signals communication	Signal communication performed as per required standards	**Knowledge evidence: Detailed knowledge of:** **Method used:** The student should	The following tools, equipment and safety gear are to be available:	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			communication signals **Demonstrations:** Show the students how to communicate by using signals such as voice, sign and using body part **Group Activity:** Organize students in groups to perform signals communication	• Select type of signal to use • Use voice signals applied in communication • Use sign, draws and symbols signals applied in communication • Use body parts signals with their meaning applied in communication		explain how to perform signals communication **Principles:** The student should explain principles of using communication signals **Theories:** The student should explain: -	• Marine VHF Radio • Flags • Searchlight • Marker bouys • Radar reflectors • Netsounder • Navigational signal light	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
				• Observe the signals and interpret their meaning		• explain different fishery communication signals • How to control fishery hazards by using signals communication **Circumstantial knowledge** **Detailed knowledge about:**		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						• Safe working practices		
	1.3 Maintaining fish processing facility and surroundings	a) Cleaning fish processing facility surroundings	**Question & Answer:** Give direct questions to students and receive answers on fish processing facility surroundings **Demonstrations** Shows factors to consider and steps in cleaning fish processing facility surroundings	• Organize, tools and equipment • Select fish processing facility • Clean fish processing facility surroundings • Clean and store tools and equipment after work	Fish processing facility surroundings cleaned according to the recommended standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to clean fish processing facility surroundings **Principles:** The student should explain principles of maintaining	The following tools, equipment and safety gears should be available: - • Slashers • Cleaning Materials • Hoe • Safety gears (PPE) • Dust bin • Rake	25

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Practical Activity: Guide students in cleaning fish processing facility surroundings while handling tools and equipment safely			surrounding hygiene **Theories:** The student should explain: - • Importance of maintaining cleanliness of fish processing surroundings • Procedures involved in cleaning fish processing		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						facility surroundings **Circumstantial knowledge** **Detailed knowledge about:** • OSHA rules and regulations • Environmental pollution		
		b) Cleaning fish processing facility	**Brainstorm:**	• Organize, tools and equipment	Fish processing facility cleaned as	**Knowledge evidence: Detailed knowledge of:**	The following tools, equipment and safety gears	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Guide the students to identify fish processing facilities **Field Trip and Industrial tours:** Lead students to visit fish processing industries to view and learn cleaning of fish processing facility **Practical Work:**	• Identify fish processing facility • Clean fish processing facility • Clean and store tools and equipment after work	per required standards	**Method used:** The student should explain how to clean fish processing facility **Principles:** The student should explain principles of maintaining fish processing facility hygiene	should be available: - • Safety gears (PPE) • High pressure washers • Surface cleaning equipment • Stainless steel sanitation tools • Dust bin	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Guide students in cleaning fish processing facility safely			**Theories:** The student should explain: - • Procedures involved in cleaning fish processing facility • Importance of routine and proper cleaning of meat processing facility		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Circumstantial knowledge **Detailed knowledge about:** • OSHA rules and regulations • Carefulness when using fish processing facility		
		c) Handling fish processing solid wastes	**Discussion:** Guide the students to having lengthy conversations about	• Organize, tools and equipment	Fish processing solid wastes handled according	**Knowledge evidence: Detailed knowledge of:** **Method used:** The	The following tools, equipment and safety gears should be	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			fish processing solid wastes **Question & Answer:** Give direct questions to students and receive answers on fish processing solid wastes **Demonstrations:** Show the procedures on how to handle fish processing solid wastes	• Remove all fish processing solid wastes • Effect fish processing solid wastes to the fish product • Dispose fish processing solid wastes • Clean and store tools and equipment after work	to recommended standards	student should explain how to identify examples of fish processing solid wastes • Handle fish processing solid wastes **Principles:** The student should explain principles of handling fish processing solid wastes	available: - • Safety gears (PPE) • Tote Bins • Stainless steel tables • Screw conveyors • Fish waste crushers • High pressure washer • Dryers	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Group Work: Arrange students in groups and assign them to handle fish processing solid wastes			**Theories:** The student should explain: - • Precautions in handling fish processing solid wastes • Economic uses of fish processing solid wastes. **Circumstantial knowledge**		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Detailed knowledge about: • OSHA rules and regulations • Environmental pollution		
		d) Disposing fish processing effluents	**Group Discussion:** Organize students in groups to discuss about fish processing effluents **Demonstrations**	• Organize, tools and equipment • Identify methods of disposing fish processing effluents • Collect the effluents and	Fish processing effluents disposed according to the recommended standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to dispose fish	The following tools, equipment and safety gears should be available: - • Safety gears (PPE)	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			show the steps to dispose fish processing effluents **Group Work:** Arrange students in groups and assign them to dispose fish processing effluents	remove from workshop • Dispose fish processing effluents • Clean and store tools and equipment after work		processing effluents **Principles:** The student should explain principles of disposing fish processing effluents **Theories:** The student should explain: -	• Fish waste crushers • Equalization tanks • pH correction	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						• Handling of fish processing wastes • Economical utilization of fish processing effluents **Circumstantial knowledge** **Detailed knowledge about:** • OSHA rules and regulations		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						• Environmental pollution • Recycling of fish processing effluents		
	1.4 Handling fire incidents and accidents	a) Identifying different classes of fire	**Discussion:** Guide the students to having lengthy conversations about classes of fire **Question & Answer:**	• Select tools, equipment and safety gears • Use firefighting materials to a specific class of fire • React correctly and safely when faced	Classes of fire identified according to standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to identify classes of fire	The following tools, equipment and safety gears should be available: - • First aid kit items • Firefighting materials	30

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Give direct questions to students and receive on different classes of fire **Individual Assignment:** Assign task on identification of fire classes to each student	with a certain types of fire • Clean tools, equipment and working place • Store tools, equipment and safety gears		**Principles:** The student should explain principles of fighting with different classes of fire **Theories:** The student should explain: - • Identification of different classes of fire		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						• Maintaining firefighting equipment **Circumstantial knowledge** **Detailed knowledge about:** Safety precautions while handling fire accidents		
		b) Handling firefighting equipment	**Brainstorm:** Guide the students to describe different	• Select tools, equipment and safety gears	Firefighting equipment handled	**Knowledge evidence: Detailed knowledge of:**	The following tools, equipment and safety gears	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			firefighting equipment **Demonstrations:** Show factors to consider while handling firefighting equipment **Individual Assignment:** Assign task on safely handle firefighting equipment individually	• Identify the firefighting materials according to fire classes • Check the expired date to firefighting equipment • Clean up tools, equipment and working place • Store tools, equipment and safety gears	as per required standards	**Method used:** The student should explain how to identify types of firefighting equipment **Principles:** The student should explain principles of operating different type of firefighting materials	should be available: - • Fire extinguisher • Firefighting materials	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Theories: The student should explain: - • Importance of handling fire accidents • Functions of different fire equipment **Circumstantial knowledge** **Detailed knowledge about:**		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Safety precautions while handling fire accidents		
		c) Handling different classes of fire	**Group Discussion:** Arrange students in groups to discuss about classes of fire **Demonstrations:** Show the procedures on how to handle different classes of fire	• Select tools, equipment and safety gears • Apply right class of fire extinguisher • Apply right class of firefighting materials	Classes of fire handled as per required standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to handle different classes of fire	The following tools, equipment and safety gears should be available: - • Fire extinguishers • Fire blankets • Smoke detectors	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Group Activity: Arrange students in groups and assign to handle different classes of fire	• Clean up tools, equipment and working place • Store tools, equipment and safety gears		**Principles:** The student should explain principles of handling different classes of fire **Theories:** The student should explain: - • Importance of handling fire accidents • Possible causatives of	• Fire hoses • Fire buckets	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						different classes of fire **Circumstantial knowledge** **Detailed knowledge about:** Safety precautions while handling fire accidents		
	1.5 Performing first aid in farm	a) Identifying basic first aid items	**Brainstorm:** Guide the students in defining, identification and	• Select tools and equipment • Identify first aid items such as	First aid items properly	**Knowledge evidence: Detailed knowledge of: Method used:** The	The following tools, equipment and safety gears	25

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			mention basic first aid items **Question & Answer:** Give direct questions to students and receive answers on first aid items **Role-Play:** Guide students in small groups to describe first aid items required in	Cardiopulmonary Resuscitation, Bleeding control burn treatment and broken bone. • Store equipment used		student should explain how to identify basic first aid components **Principles:** The student should explain principles of maintaining the set of first aid items **Theories:** The student should explain: - • Importance of first aid	should be available: - • First aid Kit items • Items applied in first aid	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			workshop or working environment			• Different first aid kits and their uses • Functions of different basic first aid items **Circumstantial knowledge** **Detailed knowledge about:** • Proper storage and expire date of		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						some of first aid kit items • Safe handling of first aid kit		
		b) Observing personal safety in providing first aid	**Discussion:** Guide students to discuss about personal safety consideration in providing first aid **Field trip and industrial tours:** Lead student to visit fish processing sites and learn about	• Select tools and equipment • Select first aid items according to the type of wound • Observe personal safety precautions when doing first aid • Safe use of first aid components	Personal safety observe as required during provision of first aid services	**Knowledge evidence: Detailed knowledge of:** **Method used:** The student should explain how to ensure personal safety in providing first aid **Principles:** The student should	The following tools, equipment and safety gears should be available: - • First aid Kit • Light • Sterilizer • Mouth cover • Medical gloves	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			personal safety consideration in providing first aid **Group Activity:** Arrange students in groups and assign to them to practice personal safety during performing first aid to a person with a blood oozing wound	• Store tools and equipment		explain principles of providing first aid for different types injuries(cases) **Theories:** The student should explain: - • The use of accessories in a first aid kit • Importance of first aid		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						provision to victims • Possible injuries in fishery process and how to handle them **Circumstantial knowledge** **Detailed knowledge about:** Safety precautions to be observed		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						while performing first aid		
		c) Performing artificial respiration	**Discussion:** Guide students in having length conservation about artificial respiration **Demonstrations:** Show the procedures to perform artificial respiration to a person who fail to breath	• Select tools and equipment • Place the victim to open area for more oxygen • Lie up the victim and high breath in mouth to give him/her oxygen • Gently tilt the head back and lift the	Artificial respiration performed according to recommended procedure	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to take precaution in performing artificial respiration	The following tools, equipment and safety gears should be available: - • First aid Kit • Light • Bag valve mask (BVM) • Sterilizer • Medical gloves	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Group Activity: Arrange students in groups and assign them to perform artificial respiration	chin to open the airway • Place your mouth over the person's mouth, and create a seal • Give 1 breath over 1 second – watch for the chest to rise • If the chest doesn't rise, reposition the head and try again. • Continue giving breathing until normal he/ she		**Principles:** The student should explain principles of performing artificial respiration **Theories:** The student should explain: - • Types of artificial respiration • Procedure of making		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
				attain normal breathing. • Store tools and equipment		artificial - respiration **Circumstantial knowledge** **Detailed knowledge about:** • Safety precautions to be observed while performing first aid • Mechanism of reporting the		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						victim to relevant authorities.		
		d) Performing cardio pulmonary resuscitation	**Discussion:** Guide students in having length conservation about cardio pulmonary resuscitation **Demonstrations:** Show the procedures to perform cardio pulmonary resuscitation	• Select tools and equipment • Place the victim to open area for more oxygen • Check him/ her breath • Give rescue breaths Make several push to the chest	Cardio pulmonary resuscitation successful performed	**Detailed knowledge of:** **Method used:** The student should explain how to perform cardio pulmonary resuscitation **Principles:** The student should explain principles	The following tools, equipment and safety gears should be available: - • First aid Kit • Medical gloves • Antiseptic wipes • Bag valve mask (BVM)	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Group Activity: Arrange students in groups and assign them to perform cardio pulmonary resuscitation	• Check for returning into normal respiration • Store tools and equipment		of cardio pulmonary resuscitation **Theories:** The student should explain: - • Importance of cardio pulmonary resuscitation • Procedure of making cardio pulmonary resuscitation.	• Rescue blanket • Gauze pads	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Circumstantial knowledge **Detailed knowledge about:** Safety precautions to be observed while performing first aid		
2.0 Performing preventive maintenance of aquaculture	2.1 Conducting preventive maintenance of fishing gears	a) Performing net patching and mending	**Brainstorm:** Guide the students to define, identify and mention types of nets used for fishing	• Select tools, equipment and materials • Select net area to be mended	Net patching and mending performed as per required standards	**Knowledge evidence: Detailed knowledge of:** **Method used:** The student should	The following tools, equipment and safety gears should be available: -	45

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
infrastructure and fishing gears			**Field trips and industrial tours:** Lead students to visit fishing sites to view and learn on net patching and mending **Practical Work:** Guide the students to conduct net patching and mending	• Identify methods used in performing net patching and mending • Cut the losses twine from damaged area • Perform net patching • Perform net mending • Observe safety • Store tools and equipment		explain how to perform net patching and mending **Principles:** The student should explain principles of fixing torn parts of the net **Theories:** The student should explain: -	• Knives • Preventive maintenance schedule • Safety boots • Netting twines • Mesh gauges • Netting needle • Buoys • Ropes	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						• Differences between patching and mending • Steps of patching and mending the fishing net • Importance net patching and mending **Circumstantial knowledge**		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Detailed knowledge about: Carelessness in mending torn parts can end up tearing the whole net		
		b) Conducting maintenance of fishing baskets	**Discussion:** Organize students in groups to discuss about fishing baskets **Field trips and industrial tours:**	• Select tools, equipment and materials • Identify damaged parts in fishing basket • Conduct maintenance of	Fishing baskets maintained as per required standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to repair fish baskets	The following tools, equipment and safety gears should be available: - • Sinkers • Bait basket • Floats	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Lead students to visit fishing sites to view and learn on maintenance of fishing baskets **Practical Work:** Guide the students to conduct maintenance of fishing baskets	damaged fishing baskets • Observe safety • Store tools and equipment		**Principles:** The student should explain principles of maintaining fishing baskets **Theories:** The student should explain: - • Properties of maintenance of fishing baskets	• Rope • Knife • Scoop net • Fishing gloves	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Circumstantial knowledge **Detailed knowledge about:** • Essential parts of fishing basket • Safety precautions while handling fishing gears		
		c) Conducting maintenance of pole and	**Brainstorm:** Guide the students in describe pole and lines fishing	• Select tools, equipment and materials	Pole and lines, and long lines maintained as per required standard	**Knowledge evidence: Detailed knowledge of:** **Method used:** The	The following tools, equipment and safety gears	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
		lines, and long lines	**Field trips and industrial tours:** Lead students to visit fishing sites to view and learn on pole and lines, and long lines **Group Work:** Arrange the students in groups to conduct pole and lines, and long lines fishing	• Assess blockage to the line • Perform maintenance of pole and lines • Perform maintenance of long lines • Observe safety • Store tools and equipment		student should explain how to maintain line fishing gears **Principles:** The student should explain principles of maintaining of pole and lines and long lines **Theories:** The student should explain: -	should be available: - • Fishing rod • Hooks • Fishing line • Snap for hook • Floats • Weights • Gunnel roller • Safety gears (PPE) • Tackle box • Fish stringer	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						• Describe types of pole and lines and long lines • Procedure for maintaining poles and lines, and long lines **Circumstantial knowledge** **Detailed knowledge about:** Consequences of carelessness in		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						maintaining of pole and lines and long lines		
	2.2 Conducting preventive maintenance of aquaculture infrastructure	a) Performing preventive maintenance of fish ponds	**Discussion:** Guide students in having length conversation about maintenance of fish ponds **Question & Answer:** Give direct questions to students and receive on	• Select machine and equipment • Use service manuals for recirculation aquaculture system • Identify leakage areas in ponds • Repair the damaged parts • Observe safety	Fish ponds maintained according to the required standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to perform preventive maintenance of ponds **Principles:** The student should explain the	The following tools, equipment and safety gears should be available: - • Water pump • Test kits • pH meter • DO meter • Scoop net	45

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			maintenance of fish ponds **Field trips** Lead students to visit aquaculture farms to view and learn on preventive maintenance of fish ponds **Practical work:** Guide the students to perform preventive	• Clean farm equipment machines at the farm workshop • Store farm equipment and machines		principles of maintaining fish ponds **Theories:** The student should explain: - • Importance of routine preventive maintenance of fish ponds • Features of different types of fish ponds		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			maintenance of fish ponds			**Circumstantial knowledge** **Detailed knowledge about:** Carefulness in preventive maintenance of fish ponds		
		b) Performing preventive maintenance of aquarium and back yard ponds	**Discussion:** Guide students in having length conversation about maintenance of aquarium	• Select machine and equipment • Identify leakage areas in aquarium • Identify and prepare materials	Aquarium and back yard ponds maintained as per required standard	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to	The following tools, equipment and safety gears should be available: - • Filter	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Demonstrations: Show the procedures on how to perform preventive maintenance of aquarium and back yard ponds **Group Work:** Arrange the students in groups to conduct preventive maintenance of	for making maintenance • Repair or replace the damaged parts or build new aquarium • Observe safety • Clean tools, equipment and machines • Store farm equipment and machines		service aquarium and back yard ponds **Principles:** The student should explain the principles of maintaining aquarium and back yard ponds **Theories:** The student should explain: -	• Thermometer • Lighting • Substrate • Air pump • Scoop net • Water test kit • Clear glass • Glass cutter • Pipe brushes	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			aquarium and back yard ponds			• Importance of routine preventive maintenance of aquarium and back yard ponds • Procedure of performing preventive maintenance **Circumstantial knowledge**		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Detailed knowledge about: Carefulness in maintaining aquarium and back yard ponds		
		c) Conducting preventive maintenance of recirculation systems	**Brainstorm:** Guide the students to identify properties of making recirculation systems	• Select machine and equipment • Use service manuals for recirculation aquaculture system	Recirculation systems maintained according to the required standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to servicing	The following tools, equipment and safety gears should be available: - • Fish tanks	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Field trips and industrial tours: Lead students to visit aquaculture farms to view and learn on maintenance of recirculation systems **Practical work:** Guide the students to perform preventive maintenance of recirculation systems	• Identify blocked circulation pipes • Replace the damaged parts • Observe safety • Clean tools, ~~farm~~ equipment and machines ~~at the farm workshop~~ • Store farm equipment and machines		recirculation system **Principles:** The student should explain the principles of maintaining recirculation systems **Theories:** The student should explain: -	• Biological filter • Mechanical Filter • Water pump • Aerators • Control panel • Welding or cutting tool • Incubator • Pipes	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						• Importance of conducting preventive maintenance of recirculation systems • Components of re-circulation system and their functions **Circumstantial knowledge**		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Detailed knowledge about: Carefulness in maintaining recirculation systems		
		d) Conducting preventive maintenance of fish cages and pens	**Discussion:** Guide students in having length conversation about fish cages **Field trips** Lead students to visit aquaculture farms to	• Select machine and equipment • Identify damaged parts • Organize requirements for maintenance • Repair~~ing~~ the damaged area	Fish cages and pens maintained according to required standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to service fish cages and pen	The following tools, equipment and safety gears should be available: - • pipe wrench • Pipes (HDPE / Steel)	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			view and learn on how to maintain cages and pens **Practical work:** Guide the students to perform preventive maintenance of cages and pens	• Apply paint after service steel materials • Observe safety • Clean tools, equipment, and machines ~~at~~ • Store farm equipment and machines		**Principles:** The student should explain the principles of maintaining fish cages and pens **Theories:** The student should explain: - • Properties of fish cage and pens	• Pipes connectors • Pins and stoppers • Net bags • Rope • Bouys • Anchors	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						• Possible causatives of damages for cages and pens **Circumstantial knowledge** **Detailed knowledge about:** Carefulness in maintaining fish cage and pens		
		e) Conducting preventive	**Brainstorm:**	• Select machine and equipment	Fish hatchery unit maintained	**Knowledge evidence: Detailed**	The following tools, equipment	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
		maintenance of fish hatchery unit	Guide the students in defining, identification and mentioning types of hatchery **Question & Answer:** Give direct questions to students and receive answers on maintenance of hatchery unit **Demonstrations:** Show the considerations while	• Survey the hatchery unit to assess all properties • Use maintenance of hatchery unit manual schedule • Observe safety • Clean tools~~, farm~~ equipment and • Store farm equipment and machines	according to the required standards	**knowledge of:** **Method used:** The student should explain how to service hatchery unit **Principles:** The student should explain the principles of maintaining hatchery unit	and safety gears should be available: - • Blowers • Air stones • Incubator jags and trays • Thermometer • pH meter • Rearing tanks • Water pumps • Sand filters • Refractrometer • Scoop net	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			preforming preventive maintenance of hatchery unit **Group Activity:** Organize students into groups to practice the maintenance of hatchery unit			**Theories:** The student should explain: - • Precautions of using hatchery unit • Components of hatchery unit and their functions **Circumstantial knowledge** **Detailed knowledge about:**	• Injection tool	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Carefulness in maintaining hatchery unit		
	2.3 Conducting preventive maintenance of fishing vessels	a) Performing preventive maintenance of dugout canoe	**Brainstorm:** Guide the students to identify types of fishing boats **Group Discussion:** Arrange the students in groups to discuss how to maintain dugout canoe **Demonstrations:**	• Select tools and equipment for repairing dugout canoe • Identifying faults on dugout canoe • Repair faults on dugout canoe • Identify preventive maintenance measures required on dugout canoe	Dugout canoe maintained according to the required standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to maintain the dugout canoe **Principles:** The student should explain the principle involved	The following tools, equipment and safety gears should be available: - • Hammers • Saws • Nails • Safety boots • Painting brushes	45

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Show the steps and rules for performing maintenance of dugout canoe **Group Activity:** Organize students into groups to perform preventive maintenance of dugout canoe	• Paint vessels • Performing preventive maintenance of dugout canoe • Store tools and equipment		in repairing and maintenance of dugout canoe **Theories:** The student should explain: - • Causes of damages on dugout canoe • Procedure for making maintenance of dugout canoe	• Tape measures	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Circumstantial knowledge **Detailed knowledge about:** Carefulness in Repairing and maintenance of dugout canoe		
		b) Conducting preventive maintenance of double	**Brainstorm:** Guide the students to identify features of double outrigger canoe	• Select tools and equipment • Identifying faults on double outrigger canoe	Double outrigger canoe maintained according to the recommended standards	**Knowledge evidence: Detailed knowledge of:** **Method used:** The student should	The following tools, equipment and safety gears should be available: -	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
		outrigger canoe	**Demonstrations:** Conduct a demonstration on how to perform preventive maintenance double outrigger canoe **Group Activity:** Organize students into groups and lead them to explain differences between dugout canoe and	• Repair faults on double outrigger canoe • Paint double outrigger canoe after repair • Store tools and equipment		explain how to make repair and maintenance of double outrigger canoe **Principles:** The student should explain the principle involved in performing preventive maintenance of double outrigger canoe	• Floats • Cross beams • Platform • Paddles • Bailers • Knife • Drill • Screwdrivers • Fiberglass brushes • Rod holders	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			double outrigger canoe			**Theories:** The student should explain: - • Advantages of using of fishing by using double outrigger canoe **Circumstantial knowledge** **Detailed knowledge about:** • Consequences		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						of improper maintenance of double outrigger canoe		
		c) Conducting preventive maintenance of wooden motorized canoe	**Discussion:** Guide students in having length conversation about wooden motorized canoe **Question & Answer:**	• Select tools, equipment and machine • Identifying faults on wooden motorized canoe • Repairing faults on wooden motorized canoe	Wooden motorized canoe maintained according to the recommended standards	• **Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to conduct preventive	The following tools, equipment and safety gears should be available: - • Outboard engine • Fuel tank • Fuel lines • Paddle	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Give direct questions to students and receive answers on wooden motorized canoe **Demonstrations:** Show factors to consider while perform maintenance to wooden motorized canoe **Group Activity:**	• Painting repaired area • After drying up of the painted area push the wooden motorized canoe in water • Store equipment and machines		maintenance of wooden motorized canoe **Principles:** The student should explain the principle involved performing preventive maintenance of wooden motorized canoe	• Sand paper • Paint brushes • Knife • Sealant	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Arrange the students in groups to perform preventive maintenance of wooden motorized canoe			**Theories:** The student should explain: - • Causes of damages on wooden motorized canoe • Procedure for making maintenance of wooden motorized canoe		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Circumstantial knowledge **Detailed knowledge about:** Carefulness when conduct preventive maintenance of wooden motorized canoe		
		d) Performing preventive maintenance	**Discussion:** Guide students in having length conversation about	• Select tools, equipment and machine	Fiberglass canoe maintained according to	**Knowledge evidence: Detailed knowledge of: Method used:** The	The following tools, equipment and safety gears	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
		of fiberglass canoe	preventive maintenance of fiberglass canoe **Field trips** Lead students to visit fishing sites to view and learn on operation and maintenance of fiberglass canoe **Practical work:** Guide the students in conducting	• Identify damaged points on vessels • Repair damaged portions • Paint vessels • Observe safety • Store equipment and machines	recommended standards	student should explain how to perform preventive maintenance of fishing boat **Principles:** The student should explain the principle involved performing preventive maintenance of fiberglass canoe	should be available: - • Laminating rollers • Knife • Demel tool • Drill • Screwdrivers • Fiberglass brushes • Safety goggles • Safety gloves	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			preventive maintenance of fiberglass canoe			**Theories:** The student should explain: - • Repair and maintenance of different fiberglass canoe **Circumstantial knowledge** **Detailed knowledge about:** Carefulness in using tools and equipment		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						during performing preventive maintenance of fiberglass canoe		

Form Two

Table 4: *Detailed Contents for Form Two*

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
1.0 Selecting areas and designing different aquaculture systems	1.1 Selecting area for different aquaculture systems	a) Identifying different aquaculture systems	**Discussion:** Guide students in having length conversation about aquaculture systems **Question and answer:** Give direct questions to students and receive answers on aquaculture systems **Group Activity:** Organize students into groups and lead them to	• Identify different aquaculture systems by using pictures or videos • Draw simple diagram of different aquaculture systems • Identify suitable area for different aquaculture systems • Clean and store tools or equipment used	Aquaculture systems identified according to standards	**Detailed knowledge of:** **Method used:** The student should explain how to identifying different aquaculture systems **Principles:** The student should explain the principle involved in identification of aquaculture systems **Theories:** The student should explain: -	The following tools, equipment and safety gears should be available: - • Pictures • Videos	15

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			identify different aquaculture systems			• Importance of aquaculture • Functions of different aquaculture systems **Circumstantial knowledge Detailed knowledge about:** • Properties of different aquaculture systems		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
		b) Selecting area for ponds and hatchery units	**Brainstorm:** Guide the students in defining and identifying area for constructing fish ponds and hatchery units **Demonstrations:** Show how to determine suitable area for	• Select tools and equipment • Analyze quality of soil for fish farming • Select suitable area for ponds and hatchery units • Set the aquaculture system	Selected area for ponds and hatchery meets the recommended criteria	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to identify suitable site for establishing fish pond **Principles:** The student should explain the	The following tools, equipment and safety gears should be available: - • Water pump • Test kits	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			establishment of fish pond and hatchery unit	• Clean and store tools and equipment		principle involved in selecting site for establishing ponds and hatchery units **Theories:** The student should explain: - • Precautions in establishing ponds and hatchery units • Type of soil suitable for establishment of fish pond and hatchery unit.	• pH meter • DO meter • Scoop net • Incubator jags and trays • Thermometer • Refractro meter	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Circumstantial knowledge Detailed knowledge about: Environmental pollution rules and regulation		
		c) Selecting area for cage and pen farming	**Discussion:** Guide students in having length conversation about cage and pen farming **Field trips**	• Select tools and equipment • Observe wind, tide and current to a specific area before cage and pen farming	Selected area for cage and pen farming meets the recommended criteria	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to identify area suitable for fish cage and pen farming	The following tools, equipment and safety gears should be available: -	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Lead students to visit aquaculture farms to learn about cage and pen farming **Group work:** Arrange the students in groups to survey and select suitable area for cage and pen farming	• Select suitable area for cage and pen farming • Clean and store tools and equipment		**Principles:** The student should explain the principle involved in selecting site for establishing cage and pen farming **Theories:** The student should explain: - • Economic importance of cage and pen farming • Components of fish cage and fish pen. **Circumstantial knowledge Detailed knowledge about:**	• pipe wrench • Pipes (HDPE / Steel) • Pipes connectors • Pins and stoppers • Net bags • Rope • Bouys • Anchors	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Differences between cage and pen farming		
		d) Selecting area for smart tank farming	**Brainstorm:** Guide the students in defining and identifying area for smart tank farming **Demonstrations:** Shows how to determine suitable area for smart tank farming **Field trips** Lead students to visit aquaculture farms to	• Select tools and equipment • Observe the direction of sunlight to the tanks • Check source of water • Select suitable area for smart tank farming • Clean and store tools and equipment	Selected area for smart tank farming meets the recommended criteria	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to identify area suitable for fish smart tanks **Principles:** The student should explain the principle involved in selecting area for smart tank farming	The following tools, equipment and safety gears should be available: - • Smart filter • LED lights • TDS mater • Filters • Thermometer	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			learn about smart tank farming **Group work:** Arrange the students in groups and lead them to survey and select suitable area for smart tank farming			**Theories:** The student should explain: - • Priorities in selecting area for smart tank farming • Limiting factors in selection of site for smart tank fish farming **Circumstantial knowledge Detailed knowledge about:** Safety precautions when selecting area for smart tank farming		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
	1.2 Designing aquaculture systems (amenities)	a) Designing ponds and hatchery units for fish	**Discussion:** Guide students in having length conversation about designing fish pond and hatchery **Demonstrations:** Show factors of considerations during designing the fish ponds and hatchery **Practical work:** Guide the students in designing the fish ponds and hatchery	• Select tools and equipment • Draw simple sketch diagrams of fish hatchery • Perform layout of the proposed fish ponds • Set the hatchery unit • Set foundation of ponds • Set water flow systems in the pond • Clean and store tools and equipment	Fish ponds and hatchery units designed according to the recommended standards	**Knowledge evidence:** **Detailed knowledge of:** **Method used:** The student should explain how to design ponds and hatchery units for fish **Principles:** The student should explain the principle involved in selecting site for establishing ponds and hatchery units **Theories:** The student should explain: -	The following tools, equipment and safety gears should be available: - • Aerators • Incubator jags and trays • Thermometer • pH meter • Rearing tanks	30

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						• Precautions in establishing ponds and hatchery units • Factors to consider in designing fish ponds and hatchery units **Circumstantial knowledge Detailed knowledge about:** Environmental pollution rules and regulation	• Water pumps • Sand filters • Refractro meter • Scoop net	
		b) Designing fish cages and pen	**Brainstorm:** Guide the students to define and identify	• Select tools and equipment • Select shape of cage to design	Fish cages and pen designed according to the	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain	The following tools, equipment and safety gears	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			properties required for cage design **Demonstrations:** Show the factors of considerations during designing fish cages and pen **Practical work:** Guide the students in designing the fish cages and pen	• Set and cut pipes according to requirements • Join the pipes together to form shape of cage • Assess the cage before pulling it into water • Set the cage according to the direction of wind • Clean and store tools and equipment	recommended standards	how to design cages and pen for fish farming **Principles:** The student should explain the principle involved in designing cages and pen for fish farming **Theories:** The student should explain: - • Procedures required in designation of fish cages and pen • Different shapes of fish cages and pens	should be available: - • pipe wrench • Pipes (HDPE / Steel) • Pipes connectors • Pins and stoppers • Net bags • Rope • Bouys • Anchors	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Circumstantial knowledge Detailed knowledge about: Safety precautions in designing the fish cage and pen		
		c) Designing smart tank units	**Group Discussion:** Arrange the students in groups to identify properties for smart tank farming **Demonstrations:** Shows how to design smart tank farming **Field trips**	• Select tools and equipment • Layout the fish tanks • Identify type of fish species required for smart tank farming • Set the smart tank unit • Set water circulation systems in the smart tank	Smart tank designed as per required standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to design smart tanks for fish farming **Principles:** The student should explain the principle involved in	The following tools, equipment and safety gears should be available: - • Water tanks • Smart filter	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Lead students to visit aquaculture farms to learn about smart tank farming **Group work:** Arrange the students in groups to ~~perform~~ design smart tank for fish farming	• Clean and store tools and equipment		designation of smart tank for fish farming **Theories:** The student should explain: - • Procedures when designing smart tank units • Limitations of using smart tanks **Circumstantial knowledge Detailed knowledge about:** Safety precautions when designing smart tank units	• LED lights • TDS mater • Filters • Thermometer • Pipes • Water pump • Aerator	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
2.0 Rearing fish in different systems	2.1 Rearing fish in ponds	a) Performing pond liming	**Brainstorm:** Guide the students to define , identify and mention pond limes **Demonstrations:** Shows the procedure to apply lime appropriately in fish pond **Practical work:** Under your supervision guide the students to perform pond liming under the supervision from teacher	**The trainee should be able to:** • Select tools, equipment and machines • Select the collect lime required in fish pond • Observe the expired date of lime • Remove water in pond before liming • Perform pond liming • Fill in water to required level of pond	Pond liming performed according to the re commended standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to perform pond liming: **Principles:** The student should explain the principle involved in pond fish farming **Theories:** The student should explain: - • Limitations in liming the fish ponds	The following tools, equipment and safety gears should be available: - • Water quality test kits • Buckets • Shovel • Pipes • Water pump • Scoop net	20

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
				• Clean and store tools and equipment		• Advantages of pond liming **Circumstantial knowledge Detailed knowledge about:** Knowledge and skills on pond liming		
		b) Filling and maintaining water quality	**Brainstorm:** Guide the students to identify water quality parameters **Field trips** Lead students to visit aquaculture farms to learn about filling and maintain water quality	**The trainee should be able to:** • Select tools, equipment and machines • Set water inlets and outlets	Water quality maintained according to required standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to: • Describe water quality parameters • Maintain water quality in fish pond	The following tools, equipment and safety gears should be available: - • Pipes	

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			Group work: Arrange the students in groups and lead them to fill the fish pond and maintain water quality	• Fill in water to required level of pond • Maintain water quality parameters • Clean and store tools and equipment		**Principles:** The student should explain the principle involved in maintaining water quality **Theories:** The student should explain: - • Water quality management • Factors to consider in maintaining level and quality of a fish pond	• Water pump • Water quality test kits • pH meter • Refractro meter	

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Circumstantial knowledge Detailed knowledge about: Knowledge and skills on maintaining water quality		
		c) Fertilizing pond	**Discussion:** Guide students in having length conversation about fertilization of fish pond **Demonstrations:** Show the procedure on how to fertilize fish pond **Practical work:**	**The trainee should be able to:** • Select tools and equipment • Select the type of fertilizer required in fish pond • Apply fertilizer in the fish pond • Stock the fish pond	Fish pond fertilized according to required standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to: • Identify types of fertilizers • Apply fertilizer in pond	The following tools, equipment and safety gears should be available: - • Hoes • Shovel • Buckets	

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Guide the students to apply fertilizer in fish pond	• Clean and store tools and equipment		**Principles:** The student should explain the principle involved in fertilizing fish pond **Theories:** The student should explain: - • Fertilization of fish pond **Circumstantial knowledge Detailed knowledge about:** Knowledge and skills on Fertilizing fish pond	• Rake • Polytherine bags	
		d) Stocking fingerlings	**Brainstorm:**	**The trainee should be able to:**	Fish fingerlings stocked	**Knowledge evidence: Detailed knowledge of: Method used:** The	The following tools, equipment and	

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			Guide the students in defining and identifying fish fingerlings **Demonstrations:** demonstrate to students on how to stock fingerlings **Group work:** Arrange students in groups and assign them to stock fish fingerlings	• Select tools, equipment and machines • Select type fish to be stocked • Fill in water to required level of pond • Stock the fish pond • Clean and store tools and equipment	according to the recommended procedure	student should explain how to apply acclimatization process **Principles:** The student should explain the principle involved in acclimatizing fingerlings **Theories:** The student should explain: - • Precautions when stocking fingerlings • Procedure for stocking fingerlings	safety gears should be available: - • Polytherine bags • Water quality test kits • Buckets	

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Circumstantial knowledge Detailed knowledge about: Knowledge and skills on stocking fingerlings		
		e) Determining growth performance of fish	**Discussion:** Guide students in having length conversation about fish growth performance **Question and answer:** Give direct questions to students and receive answers on fish growth performance	**The trainee should be able to:** • Select tools, equipment and machines • Determine age of fish by using stocking date • Determine growth performance in relation to age of fish	Growth performance determined as per required standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to manage fish growth performance **Principles:** The student should explain the principle involved in	The following tools, equipment and safety gears should be available: - • Weighing scale • Scoop net • Hooks	

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Group Activity: Organize students into groups and lead them to determine fish growth performance	• Clean and store tools and equipment		determining fish growth performance **Theories:** The student should explain: - • Importance routine checking growth performance of fish • Factors which may contribute to poor growth performance **Circumstantial knowledge Detailed knowledge about:**	• Secch disk • Bucket • Fish finder	

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Knowledge and skills on growth performance of fish		
		f) Feeding fish	**Brainstorm:** Guide the students in defining, identifying and mentioning different types of fish feed **Field trips** Lead students to visit aquaculture farms to learn about feeding fish **Group work:**	**The trainee should be able to:** • Select tools, equipment and machines • Determine the age of fish • Select type and size of feeds according to the fish age • Feed fish • Clean and store tools and equipment	Fish feed according to the recommended type and feeding rations	• **Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to feeding fish **Principles:** The student should explain the principle involved in feeding different types and categories of fish	The following tools, equipment and safety gears should be available: - • Fish feed • Weighing balance • Thermometer • Scoop net • pH meter	

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Arrange the students in groups and lead them to feed fish			**Theories:** The student should explain: - • Fish feeding table structure • Types and categories of fish **Circumstantial knowledge Detailed knowledge about:** Knowledge and skills on Feeding fish		
		g) Monitoring fish health	**Discussion:**	**The trainee should be able to:**	Fish health maintained according to	**Knowledge evidence: Detailed knowledge of: Method used:** The	The following tools, equipment and	

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Guide students in having length conversation about fish health **Question and answer:** Give direct questions to students and receive answers on monitoring fish health **Group Activity:** Organize students into groups and lead them to monitor fish health	• Select tools, equipment and machines • Identify sick fish • Make tentative diagnosis of the disease • Predict source of disease and treatment • Select best way to monitor fish health • Clean and store tools and equipment	recommended standards	student should explain how to monitor fish health **Principles:** The student should explain the principle involved in monitoring fish health **Theories:** The student should explain:- • Importance of monitoring fish health • Control of fish diseases • Symptoms of sick fish	safety gears should be available: - • Water testing kits • DO meter • Refractro meter • pH meter	

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Circumstantial knowledge Detailed knowledge about: Knowledge and skills on monitoring fish health		
	2.2 Rearing fish in smart tanks	a) Performing aquarium fish farming	**Discussion:** Guide students in having length conversation about aquarium fish farming **Demonstrations:** Show the student on how to make aquarium and perform aquarium fish farming	**The trainee should be able to:** • Select tools, equipment and machines • Cut glasses according to the shape of aquarium	Aquarium fish farming performed as per required standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to performing aquarium fish farming **Principles:** The student should explain the	The following tools, equipment and safety gears should be available: - • Filter • Thermometer	20

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Practical work: Guide the students in making aquarium for fish farming	• Set glasses and apply silicone sealant to the edges • Fill in water to required level • Stock fishes in aquarium • Clean and store tools and equipment		principle involved in aquarium fish farming **Theories:** The student should explain: - • Managing different types of aquariums • Importance of aquarium fish farming **Circumstantial knowledge Detailed knowledge about:** Safety precaution when performing	• Lighting • Substrate • Air pump • Scoop net • Water test kit • Clear glass • Glass cutter • Pipe brushes	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						aquarium fish farming		
		b) Perform aquaponics farming	**Discussion:** Guide students in having length conversation about aquaponics farming **Field trips** Lead students to visit aquaculture farms and learn about aquaponics farming **Group work:** Arrange the students in groups to perform aquaponics farming	**The trainee should be able to:** • Select tools, equipment and machines • identify type of fish species and crop to be farmed • Set water inlets and outlets in aquaponics • Fill in water to required level • Stock fish in aquaponics • Clean and store tools	Aquaponics fish farming performed as per required standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to perform aquaponics farming **Principles:** The student should explain the principle involved in performing aquaponics fish farming	The following tools, equipment and safety gears should be available: - • Pipe lines • Fingerling carrying bags • Water quality test kits	

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
				and equipment		**Theories:** The student should explain: - • Economic importance of aquaponics fish farming • Common plants used for aquaponics fish farming • Limitations for aquaponics fish farming **Circumstantial knowledge Detailed knowledge about:**		

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Safety precaution when performing aquaponics farming		
		c) Perform Re–circulation fish farming	**Discussion:** Guide students in having length conversation about recirculation fish farming **Field trips** Lead students to visit aquaculture farms and learn about recirculation aquaculture system **Group work:** Arrange the students in groups and lead them to	**The trainee should be able to:** • Select tools, equipment and machines • Cut pipes according to the length and width required • Arrange well and join together different properties • Set the recirculation water system	Re–circulation fish farming performed according to required standards	**Knowledge evidence:** **Detailed knowledge of:** **Method used:** The student should explain how to perform the recirculation aquaculture system **Principles:** The student should explain the principle involved in performing the recirculation aquaculture system	The following tools, equipment and safety gears should be available: - • RAS unit • Buckets • Pvc pipes • Water quality test kits	

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			perform recirculation fish farming	• Fill in water to required level • Stock fish in recirculation aquaculture system • Clean and store tools and equipment		**Theories:** The student should explain: - • Properties to perform recirculation aquaculture system • Costs involved in making recirculation aquaculture system **Circumstantial knowledge Detailed knowledge about:** Recirculation aquaculture system		

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						need high quality water		
		d) Performing raceway fish farming	**Discussion:** Guide students in having length conversation about raceway fish farming **Field trips** Lead students to visit aquaculture farms to learn about raceway fish farming **Group work:** Arrange the students in groups and lead them to	**The trainee should be able to:** • Select tools, equipment and machines • Select suitable area for raceway fish farming • Observe quality of water according to fish species to be farmed • Set the raceway fish in large body of water	Raceway fish farming performed according to the recommended standards	**Knowledge evidence:** **Detailed knowledge of:** **Method used:** The student should explain how to perform raceway fish farming **Principles:** The student should explain the principle involved in performing raceway fish farming **Theories:** The student should explain: -	The following tools, equipment and safety gears should be available: - • Ropes • Fishing net • Anchor • Floats	

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			perform raceway fish farming	• Stock fish and feed in raceway • Clean and store tools and equipment		• Economic importance of raceway fish farming • Factors to consider in performing raceway fish farming **Circumstantial knowledge Detailed knowledge about:** Safety precaution when performing raceway fish farming		

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
	2.3 Performing cage and pen aquaculture systems	a) Rearing fish in a cage	**Brainstorm:** Guide the students in defining and identifying the fish cage **Question & answer:** Give direct questions to students and receive answers on fish cage farming **Demonstrations:** Show the students steps of making fish cage **Practical work:**	**The trainee should be able to:** • Select tools, equipment and machines • Select type of fish species • Choose type of fish feed either floating or sinking • Design fish cages • Insert cage in the water • Cover webbing net on top of the cage • Clean and store tools and equipment	Fish reared in cage according to the recommended standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to rea fish in cages **Principles:** The student should explain the principle involved in rearing fish in cage **Theories:** The student should explain: - • Advantages of cage fish farming	The following tools, equipment and safety gears should be available: - • pipe wrench • Pipes (HDPE / Steel) • Pipes connectors • Pins and stoppers	30

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Guide the students to conduct fish cage farming			• Procedure for performing cage fish farming. • Limitations of practicing fish cage farming **Circumstantial knowledge Detailed knowledge about:** Fish cage farming should be practiced in water depth of not less than four meters from cage basement	• Cage net bags • Rope • Bouys • Anchors	
		b) Rearing fish in a pen	**Brainstorm:**	**The trainee should be able to:**	Fish reared in pen according to the	**Knowledge evidence: Detailed knowledge of: Method used:** The	The following tools, equipment and	

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Guide the students in defining and identifying the fish pen **Field trips** Lead students to visit aquaculture farms to learn about fish pen farming **Practical work:** Guide the students to conduct fish pen farming	• Select tools, equipment and machines • Select type of fish species • Choose type of fish feed • Design fish pen • Insert pen in the water • Clean and store tools and equipment	recommended standards	student should explain how to rear fish a fish pen **Principles:** The student should explain the principle involved in rearing fish in pen **Theories:** The student should explain: - • Challenges of pen fish farming • Factors to consider in performing fish pen farming	safety gears should be available: - • pipe wrench • Pipes (HDPE / Steel) • Pipes connectors • Pins and stoppers • Pen net bags • Rope • Bouys	

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						Circumstantial knowledge Detailed knowledge about: In fish pen farming the net should be allowed to reach the seabed	• Anchors	
		c) Monitoring fish cage and pen	**Group Discussion:** Arrange students in groups to discuss about monitoring fish cage and pen **Field trips** Lead students to visit aquaculture farms and	**The trainee should be able to:** • Select tools, equipment and machines • Select the monitoring system according to fish species and	Cage and pen fish farming monitored as per required standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to monitor disease in fish cage and pen **Principles:** The student should explain the principle involved in	The following tools, equipment and safety gears should be available: - • Netting needle	

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			learn about fish cage and pen farming **Group work:** Arrange the students in groups to conduct monitoring of fish cage and pen	surrounding environment • Inspect fish cage and pen blockage • Repair the blockage part to fish cage or pen • Clean and store tools and equipment		Monitoring fish cage and pen **Theories:** The student should explain: - • Advantages of cage and pen fish farming • Routine monitoring of fish cages and pen **Circumstantial knowledge Detailed knowledge about:** Safety precaution when monitoring fish cage and pen	• Mesh gauge • Pipes connectors • Pins and stoppers • Sealants • Welding machine • Fishing twine	

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
	2.4 Performing intergrated agro – aquaculture	a) Performing fish – poultry integrated farming	**Brainstorm:** Guide the students to define and identify ~~and mention~~ the integrated fish farming **Field trips** Lead students to visit aquaculture farms and learn about fish – poultry integrated farming **Group work:** Arrange the students in groups and lead them to perform fish poultry integrated farming	**The trainee should be able to:** • Select tools, equipment and machines • Choose the healthily poultry and fish • Select suitable area for fish – poultry integrated farming • Set the poultry cage above the fish cage for integrated farming • Fill pond with water and stock fingerlings	Fish – poultry integrated farming performed according to the recommended standards	**Knowledge evidence:** **Detailed knowledge of:** **Method used:** The student should explain how to performing fish – livestock integration **Principles:** The student should explain the principle involved in performing fish – poultry integrated farming	The following tools, equipment and safety gears should be available: - • Timbers • Tape measures • Metal bars • Bamboos • Ropes • Plastic tanks (sim tanks) • Buoys	20

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
				• Clean and store tools and equipment		**Theories:** The student should explain: - • Challenges when perform fish – poultry integrated farming • Procedure of performing fish-poultry integrated farming • Importance of fish-poultry integrated farming **Circumstantial knowledge Detailed knowledge about:**	• Sinkers • Webbing net • Pvc pipes • Water quality test kits • Buckets • Polytherine bags • Fish feed mixer machine	

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						• Water quality control • Careful use and application of Agro - chemicals		
		b) Performing fish – horticultural inter-grated farming	**Discussion:** Guide students in having length conversation about fish-horticultural integrated farming **Field trips and Industrial tours:** Lead students to visit aquaculture farms to learn about horticultural farming	**The trainee should be able to:** • Select tools, equipment and machines • Choose a type of crop from cultured crops • Select suitable soil for fish – horticultural farming	Fish – horticultural inter-grated farming performed according to the recommended standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to: • Perform fish – vegetable integration • Perform fish – vegetable – livestock integration	The following tools, equipment and safety gears should be available: - • Hoe • Rake • Pvc pipes • DO meter • pH meter	

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Group work: Arrange the students in groups to conduct fish – horticultural inter-grated farming	• Clear the area and set the horticultural process • Set fish pond near to crops • Set water ways to inter-grate fish – horticultural farming • Clean and store tools and equipment		**Principles:** The student should explain the principle involved in performing fish – horticultural inter-grated **Theories:** The student should explain: - • Carrying capacity of fish and vegetables in the same area • Factors to consider during practicing fish – horticultural integrated farming.	• Water pump • Thermometer • Fish tanks • Aerators • Mechanical filter • Biological filter • Weighing balance • Biosecurity gears	

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						Circumstantial knowledge Detailed knowledge about: • Water quality control • Careful use and application of Agro - chemicals		
	2.5 Harvest fish from different aquaculture systems	a) Performing net fishing	**Discussion:** Guide students in having length conversation about net- fishing **Field trips** Lead students to visit fishing areas to learn fishing	**The trainee should be able to:** • Prepare boat, fishing net and fishing properties • Identify number of participants in relation to boat carrying capacity	Net fishing performed according to the recommended standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to performing net fishing	The following tools, equipment and safety gears should be available: - • Fishing nets	25

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Group work: Arrange the students in groups and lead them to conduct net fishing	• Round and haul the fishing net to target fishes • Park fish in container and use ice for cooling • Determine weight of fish /catch • Clean and store tools and equipment		**Principles:** The student should explain the principle involved in net fishing **Theories:** The student should explain: - • Merits and demerits of net fishing • Types of fishing nets • Laws related to net fishing **Circumstantial knowledge Detailed knowledge about:**	• Netting needle • Mesh gauge • Bins • Weighing balance • PPE	

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						• Swimming techniques • Fish handling		
		b) Performing scoop net fishing	**Brainstorm:** Guide students in defining and identification of scoop net **Field trips ÷** Lead students to visit fishing areas, fish ponds and hatchery unit to learn on scoop net fishing **Practical work:**	**The trainee should be able to:** • Select tools, equipment and machines • Choose length of pole attached to the net • Select mesh size of scoop net according to size of fish • Use scoop net to remove fish out from water	Scoop net fishing performed according to the recommended standards	**Knowledge evidence:** **Detailed knowledge of:** **Method used:** The student should explain how to performing fishing by using scoop net **Principles:** The student should explain the principle involved in Performing scoop net fishing	The following tools, equipment and safety gears should be available: - • Scoop nets • Pole and line • Buckets • Hooks • Adjustable handlines	

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			Assign students to harvest fish from pond by using scoop net	• Clean and store tools and equipment		**Theories:** The student should explain: - • Cost required for scoop net fishing • Merits and demerits of scoop net fishing **Circumstantial knowledge Detailed knowledge about:** Marketing fish	• Lights • Fish bin • Knife • Hand gloves • Floats	
		c) Performing hand and line fishing	**Discussion:** Guide students in having length conversation about hand and line fishing **Demonstration:**	**The trainee should be able to:** • Select tools, equipment and machines	Hand and line fishing performed according to the recommended standards	**Knowledge evidence: Detailed knowledge of: Method used:** The student should explain how to perform hand and line fishing	The following tools, equipment and safety gears should be available: -	

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			Show steps on how to make hand and line fishing gear; and the fishing procedures **Individual work:** Assign students individually to conduct hand and line fishing	• Choose type of bait either live or non-alive • Set the line to the pole • Attach bait to the line and put it in water to attract fish • Feel the vibration of line to catch fish • Pull up the line after catch, then remove fish from line • Clean and store tools and equipment		**Principles:** The student should explain the principle involved in performing hand and line fishing **Theories:** The student should explain: - • Procedures of making hand and line fishing. • Recommended sites for hand and line fishing	• Hand spools/reef • Monofilament • Braided line • Hooks • Sinkers • Fishing gloves • Knife • Baits • Tackle box	

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				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Circumstantial knowledge Detailed knowledge about: • Marketing • Fish handling		
3.0 Preparing fish feeds	3.1 Preparing supplementary feeds	a) Identifying fish feed ingredients	**Brainstorm:** Guide the students in defining and identification fish feed ingredients **Demonstrations:** Show the sample of feed ingredients such as rice bran, sun flower cake and others	**The trainee should be able to:** • Select working tools, equipment, utensils and safety gears • Use the food nutritional requirement before prepare the fish feed • Select fish feed ingredients	Fish feed ingredients properly identified	**Detailed knowledge of:** **Method used:** The student should explain how to identify different types of fish feed ingredients **Principles:** The trainee should explain principles involved in identifying fish feed ingredients	The following tools, equipment and safety gears should be available: - • Fish feed ingredients • Videos • Diagrams	30

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Role-Play: Assign students to describe ingredients required to make fish feed	• Select type of fish species • Clean tools, equipment used and work place • Store tools and equipment		**Theories:** The trainee should explain: - • Nutritional requirement for different types of fish • Factors to consider in selecting fish feed ingredients **Circumstantial knowledge: Detailed knowledge about:** Careful observation of fish feed ingredients		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
		b) Preparing flour fish feed	**Discussion:** Guide students in having length conversation about flour fish feed **Field trips and industrial tours:** Lead students to visit fish feed industry to learn on making fish feed **Group work:** Arrange the students in groups and lead them to prepare flour fish feed	**The trainee should be able to:** • Select working tools, equipment, utensils and safety gears • Collect required fish feed ingredients • Weigh feed ingredients according to ratio as per formula • Use fish feed formula • Mix the ingredients and grind to prepare fish feed flour	Flour fish feed prepared as per required standards	**Detailed knowledge of:** **Method used:** The student should explain how to prepare flour fish feed for different texture **Principles:** The trainee should explain principles involved in preparing flour fish feed **Theories:** The trainee should explain: - • Nutritional values of different feed ingredients • Common types of fish feeds	The following tools, equipment and safety gears should be available: - • Fish Grinder • Fish feed ingredients • Sacks • Sack needles • Calculator • Shovel	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
				• Clean and store tools, equipment used		**Circumstantial knowledge: Detailed knowledge about:** Safety precautions while operating feed grinding machine	• Hand gloves • Mouth cover	
		c) Preparing fish pellets	**Discussion:** Guide students in having length conversation about fish Pellets **Field trips and industrial tours:** Lead students to visit fishing areas to learn on preparation of fish pellets	**The trainee should be able to:** • Select working tools, equipment, utensils and safety gears • Collect required fish feed ingredients • Weigh, mix and grind the ingredients into fine powder	Fish Pellets prepared according to the required standards	**Detailed knowledge of: Method used:** The student should explain how to prepare fish pellets with different size **Principles:** The trainee should explain	The following tools, equipment and safety gears should be available: - • Fish Grinder	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Group work: Arrange the students in groups and lead them to prepare fish Pellets	• Add oil and binders to the fine powder • Add clean water to form a dough-like consistency—not too wet or too dry. • Pelletize manually or by using machine • Dry the pellets and park • Clean tools, equipment used and work place • Store tools and equipment		principles involved in preparing fish pellets **Theories:** The trainee should explain: - • Feed formulation for different size of fish pellets • Importance of making fish pellets • Factors to consider in preparation of feed pellets. **Circumstantial knowledge: Detailed knowledge about:**	• Hammer mill machine • Fish Mixer machine • Fish Pellet machine • Fish Extruder machine	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Careful observation of expiry dates of micronutrients used in compounding feeds		
	3.2 Prepare live feeds	a) Identifying available sources of live feeds	**Brainstorm:** Guide the students in defining and identifying the live fish feeds **Demonstrations:** Show the qualities of live feeds required to feed fish **Individual work:** Assign students individually to describe	**The trainee should be able to:** • Select working tools, equipment, utensils and safety gears • Select area for multiplication of live feed • Choose the live feed which are available to the environment	Sources of live feeds properly identified	**Detailed knowledge of: Method used:** The student should explain how to determine sources of live feeds **Principles:** The trainee should explain principles involved in identifying sources of live fish feed	The following tools, equipment and safety gears should be available: - • Buckets • Hand gloves • Lights	30

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			available sources of live feeds	• Use live feed which are harmless to the fish • Clean tools, equipment used and work place		**Theories:** The trainee should explain: - Criteria used in identifying sources of live fish feed Advantages of using live sources as fish feed. **Circumstantial knowledge: Detailed knowledge about:** Safety precautions while collecting live feeds	• Worm towers • Drainage trays • Safety boot • Spray bottle • Soil thermometer • Knife • Pipette	
		b) Decomposing materials for	**Discussion:**	**The trainee should be able to:**	Materials properly decomposed	**Detailed knowledge of:**	The following tools, equipment and	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
		multiplication of artemia, rotifer, earthworms, micro worms and algae	Guide students in having length conversation about multiplication of fish feed **Field trips and Industrial tours:** Lead students to visit fish feed industries to learn on preparation and multiplication of fish feed **Group work:** Arrange the students in groups and lead them to decompose different materials for multiplication of artemia,	• Select working tools, equipment, utensils and safety gears • Select area for multiplication of live feed • Collect required organic material • Decompose organic materials for multiplication of live feed (manure, grass and food left-overs) • Harvest produced live feed	for multiplication of artemia, rotifer, earthworms, micro worms and algae	**Method used:** The student should explain how to: • Identify area for multiplication of live feed • Decompose organic materials **Principles:** The trainee should explain principles involved in decomposition of organic materials **Theories:** The trainee should explain: -	safety gears should be available: - • Food waste • Manure • Wet land • Sewage system	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			rotifer, earthworms, micro worms and algae	• Clean tools, equipment used and work place • Store tools and equipment		• Procedures to produce live fish feed • Limitations in producing live feeds **Circumstantial knowledge: Detailed knowledge about:** Safety precautions while producing live feeds		
		c) Harvesting live feeds	**Brainstorm:** Guide the students in defining and identifying different types of fish feed	**The trainee should be able to:** • Select working tools, equipment, utensils and safety gears	Live feeds properly harvested	**Detailed knowledge of:** **Method used:** The student should explain how to harvest live feeds	The following tools, equipment and safety gears	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Demonstrations: Show the students how to harvest live feeds such as insects, earthworm and algae so as to feed fish **Group work:** Assign groups of students to harvest live feeds from different environment	• Select starting point and remove the outer layer of soil • Observe safety • Harvest live feed • Weigh live feed • Store in a way that harvested feed remain alive • Clean tools, equipment used and work place • Store tools and equipment		• Store the harvested live feed **Principles:** The trainee should explain principles involved in harvesting live feeds **Theories:** The trainee should explain: - • Steps in harvesting live feeds • Storage the harvested live feed • Factors to consider in harvesting live fish feed	should be available: - • Bucket • Overall • Gumboots • Masks • Gloves • Light • Digital scale • Spray bottle • Pipette	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Circumstantial knowledge: Detailed knowledge about: Safety precautions while harvesting live feeds		
4.0 Perform sea weed farming	4.1 Preparing sea weed and cucumber farm	a) Identifying suitable area for Seaweed farming	**Brainstorm:** Guide the students in defining and identifying suitable area for seaweed farming **Demonstrations:** Show the criteria parameters observed in identifying suitable area for seaweed farming	**The trainee should be able to:** • Select working tools, equipment, utensils and safety gears • Identify indicators for suitable area for seaweed farming • Select fertile area for seaweed farming	suitable area for seaweed farming identified	**Detailed knowledge of:** **Method used:** The student should explain how to identify suitable areas for seaweed farming **Principles:** The trainee should explain principles involved in identification of suitable	The following tools, equipment and safety gears should be available: - • Pictures • Camera • Diagrams • Videos	30

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Individual work: Assign students individually to describe suitable areas for seaweed farming	• Select easily accessible area • Clean tools, equipment used and work place		areas for seaweed farming **Theories:** The trainee should explain: - • Economic importance of seaweed farming • Factors to consider in seaweed farming **Circumstantial knowledge: Detailed knowledge about:** Qualities of a suitable areas for seaweed farming	• Hand lens	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
		b) Identifying suitable seaweed species	**Discussion:** Guide students in having length conversation about Seaweed species **Question & Answer:** Give direct questions to students and receive answers on Seaweed species **Group work:** Arrange students in groups and lead them to describe suitable Seaweed species	**The trainee should be able to:** • Select working tools, equipment, utensils and safety gears • Select suitable seaweed species • Clean tools, equipment used and work place	Suitable seaweed species identified according to standards	**Detailed knowledge of:** **Method used:** The student should explain how to identify features of suitable Seaweed species **Principles:** The trainee should explain principles involved in identification of suitable Seaweed species **Theories:** The trainee should explain: - • Types of seaweeds species	The following tools, equipment and safety gears should be available: - • Seaweed sorter • Camera • Collection tool • Notebook • Microscope	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						• Importance of seaweed **Circumstantial knowledge: Detailed knowledge about:** Effect of temperature in growing seaweeds	• DNA extraction kits	
		c) Performing ropes for sea weed cultivation	**Discussion:** Guide students in having length conversation about sea weed cultivation **Field trips and industrial tours:**	**The trainee should be able to:** • Select working tools, equipment, utensils and safety gears • Select seaweed seed to be cultured	Ropes properly performed for sea weed cultivation	**Detailed knowledge of:** **Method used:** The student should explain how to perform ropes for sea weed cultivation **Principles:** The trainee should explain	The following tools, equipment and safety gears should be available: - • Ropes • knives	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Lead students to visit fish feed industries to learn on sea weed processing **Practical work:** Assign students to perform sea weed cultivation	• Set the ropes and attach seaweed seeds • Perform ropes for sea weed cultivation • Clean tools, equipment used and work place • Store tools and equipment		principles involved in performing ropes for sea weed cultivation **Theories:** The trainee should explain: - • Qualities of ropes required for sea weed cultivation • Factors to consider in performing rope for seaweed cultivation **Circumstantial knowledge: Detailed knowledge about:**	• Evelon cord • Gloves • Straws • Monofilament • Anchor • Bouys • Sacks and bags	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Effect of sunlight in growing seaweeds		
		d) Performing bottom monoline sea weed farming	**Brainstorm:** Guide the students to explain concept of bottom monoline sea weed farming **Field trips** Lead students to visit different seaweed farms and learn on bottom monoline sea weed farming **Practical work:**	**The trainee should be able to:** • Select working tools, equipment, utensils and safety gears • Select the cultured seaweed seeds • Tie seaweed seed to the rope and immersed in water • Perform bottom monoline sea weed farming	Bottom monoline sea weed farming performed according to the required standards	**Detailed knowledge of:** • **Method used:** The student should explain how to performing bottom monoline sea weed farming : **Principles:** The trainee should explain principles involved in bottom monoline sea weed farming	The following tools, equipment and safety gears should be available: - • Monofilament • Anchor • Ropes • Knives • Floats • Seedlings • Snorkel	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Assign students to perform bottom monoline sea weed farming	• Clean tools, equipment used and work place • Store tools and equipment		**Theories:** The trainee should explain: - • Challenges facing bottom monoline sea weed farming • Factors to consider in performing monoline seaweed farming **Circumstantial knowledge: Detailed knowledge about:** Effect of water current in growing seaweeds	• Net fences • Sacks	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
		e) Performing sea weed farm husbandry	**Discussion:** Guide students in having length conversation about sea weed husbandry **Demonstrations:** Show the students on how to take care of a seaweed farm **Group work:** Arrange students in groups and assign them to perform sea weed farm husbandry	**The trainee should be able to:** • Select working tools, equipment, utensils and safety gears • Select area for farming seaweeds • Prepare floating bamboo • Attach seaweed seeds to the bamboo • Remove vegetation around to allow sunlight • Clean tools, equipment used and work place	Sea weed farm husbandry performed according to the required standards	**Detailed knowledge of:** **Method used:** The student should explain how to: • Identify features of seaweed farm • Take care of sea weed farm. **Principles:** The trainee should explain principles involved in performance of sea weed farm husbandry **Theories:** The trainee should explain: -	The following tools, equipment and safety gears should be available: - • Goggles • knives • Record book • Boats • Measuring tape • Bouy • Seedling spools	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						• Contamination of seaweed products • Factors which may hinder production of seaweed. **Circumstantial knowledge: Detailed knowledge about:** Photosynthesis process in growing seaweeds	• Scoop net	
		f) Harvesting sea weed	**Brainstorm:** Guide the students to explain concept of harvesting sea weed	**The trainee should be able to:** • Select working tools, equipment, utensils and safety gears	Seaweed harvested according to the required standards	**Detailed knowledge of:** **Method used:** The student should explain how to: harvest seaweed	The following tools, equipment and safety gears	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Demonstrations: Show the student procedures involved in harvesting sea weed either bottom or floating seaweed **Practical work:** Assign students to harvest sea weed	• Select a certain seaweed rope or line • Harvest seaweed • Store harvested seaweeds • Add value to harvested seaweed • Clear and store tools and equipment		**Principles:** The trainee should explain principles involved in harvesting seaweed **Theories:** The trainee should explain: - • Nutritional values of seaweeds • Recommended harvesting stage of seaweeds **Circumstantial knowledge: Detailed knowledge about:**	should be available: - • Knives • Sacks • Gloves • Hydraulic cranes • Conveyor belts • Longline lifter • Net bags	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						Products produced from of seaweed		
	4.2 Processing sea weed	a) Preparing sea weed flour	**Discussion:** Guide students in having length conversation about sea weed flour **Field trips and industrial tours:** Lead students to visit fish product industries to learn on preparation of sea weed flour **Practical work:** Assign students to prepare sea weed flour	**The trainee should be able to:** • Select working tools, equipment, utensils and safety gears • Select ingredients added to seaweed • Dry well seaweed • Use grinding machine for large scale to grind the ingredients • Mix together the mixture of seaweed	Sea weed flour prepared according to the required standards	**Detailed knowledge of:** **Method used:** The student should explain how to: prepare sea weed flour **Principles:** The trainee should explain principles involved in preparation of sea weed flour **Theories:** The trainee should explain: -	The following tools, equipment and safety gears should be available: - • Seaweed cleaning machine • Cutting machine • Dewatering machine • Solar dryer	30

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
				• Prepare sea weed flour • Clean and store tools and equipment		• Uses of sea weed flour • Advantages and disadvantages of manual making seaweed flour **Circumstantial knowledge: Detailed knowledge about:** Poisoning of sea weed products due to contaminated ingredients or poor storage	• Hammer mill • Pin mill • Dust collection • Sacks • Weighing scale	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
		b) Preparing sea weed detergent	**Brainstorm:** Guide the students in defining and identifying sea weed detergent **Question & Answer:** Give direct questions to students and receive answers on sea weed detergent **Field trips and industrial tours:** Lead students to visit fish product industries to learn on sea weed detergent	**The trainee should be able to:** • Select working tools, equipment, utensils and safety gears • Select type of detergent need to produce • Select ingredients required • Use detergent shape machine to prepare sea weed detergent • Clean and store tools and equipment	Sea weed detergent prepared according to the required standards	**Detailed knowledge of:** **Method used:** The student should explain how to prepare sea weed detergent **Principles:** The trainee should explain principles involved in preparation of seaweed detergent **Theories:** The trainee should explain: - • Differentiate detergent from	The following tools, equipment and safety gears should be available: - • Blunt scissors • Mesh bags • Coolers • Seaweed cutters • Bubble cleaning machine • Solar dryer	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			Practical work: Assign students to prepare sea weed detergent			seaweed and other sources • Limitations of making seaweed detergents. **Circumstantial knowledge: Detailed knowledge about:** Careful observation of expiry dates of sea weed precursors of sea weed products	• Vacuum sealer	
		c) Preparing sea weed bites	**Group Discussion:** Arrange the student in groups and lead them to	**The trainee should be able to:**	Sea weed bites prepared according to	**Detailed knowledge of:**	The following tools, equipment and	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
			discuss on sea weed products **Demonstrations:** Conduct a demo to produce bites by using sea weed **Group work:** Arrange students in groups and assign them to produce sea weed bites	• Select tools, equipment, and safety gears • Select shape and size of bites • Select ingredients required • Mix ingredients together • Prepare sea weed bites • Pack and label sea weed products • Clean and store tools and equipment	the required standards	**Method used:** The student should explain how to prepare seaweed bites **Principles:** The trainee should explain principles involved in preparation of seaweed bites **Theories:** The trainee should explain: - • Importance of sea weed and seaweed product	safety gears should be available: - • Sharp knife • Oven • Frying pan • Air fryer • Aking sheet • Gloves • Airtight containers • Seaweed sheets	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Process Assessment	Product / Services Assessment	Knowledge Assessment		
						• Nutrition value of seaweed bites **Circumstantial knowledge: Detailed knowledge about:** Expired date consideration of seaweed products	• Cooking oil	

Form Three

Table 5: *Detailed Contents for Form Three*

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
1. Performing fishing	1.1 Designing and making fishing gears	a) Making fishing nets with different mesh sizes	**Brainstorm:** Guide the students to explain concept of fishing net mesh sizes **Demonstrations:** Conduct a demonstration to make fishing nets with different mesh sizes **Hands-on training:** Assign and lead students to make fishing nets with different mesh sizes	**The trainee should be able to:** • Select working tools, equipment, utensils and safety gears • Design fishing nets • Make fishing nets with different mesh sizes Clean and store tools and equipment	Fishing net designed and made as per required set standards	**Detailed knowledge of:** **Method used:** The student should explain how to make net fishing **Principles:** The trainee should explain principles involved in making fishing nets with different mesh sizes **Theories:** The trainee should explain: - • Economic importance of using fishing net of	The following tools, equipment and safety gears should be available: - • Netting needle • Mesh gauge • Buoys • Sinkers • Knife • Fishing twine • Rope • Gloves	25

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
						different mesh sizes • Recommended mesh sizes for common species and categories of fish. **Circumstantial knowledge: Detailed knowledge about:** • Environmental factors influence gear type, material choice, and mesh size for effective fishing.		
		b) Making fishing basket	**Brainstorm:** Guide the students to explain concept of making fishing basket	**The trainee should be able to:** • Select and use correct tools,	Fishing baskets made according to	**Detailed knowledge of:** **Method used:** The student should explain how to make fishing baskets.	The following tools, equipment and safety gears should be	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			Demonstrations: Conduct a demonstration on how to make fishing basket by using wire mesh or wooden materials **Hands on activity:** Group students and assign them to make a fishing basket using provided tools and materials	equipment, utensils, and safety gear. • Make fishing baskets according to required standards. • Clean and store tools and equipment after use.	the required standards.	**Principles:** The trainee should explain the principles of basket design for effective fish handling, storage, and transport. **Theories:** The trainee should explain: - • Economic importance of using fishing baskets • Describe key characteristics of a good fishing basket **Circumstantial**	available: - • Floats • Knife • Wire mesh • Wire cutting pliers • Sinkers • Measuring tape	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
						knowledge: Detailed knowledge about: • Understand how weather, humidity, and water exposure affect the material durability and functionality of fishing baskets.		
		c) Performing net mending	**Brainstorm:** Guide the students to explain concept of mending a fishing net **Demonstrations:** Conduct a demonstration on how to mend fishing nets	**The trainee should be able to:** • Select appropriate tools, equipment, and safety gear. • Identify damaged parts of the fishing net.	Nets ending performed according to required standards.	**Detailed knowledge of:** **Method used:** The student should explain how to mend fishing net. **Principles:** The trainee should explain principles in net mending	The following tools, equipment and safety gears should be available: - • Netting needle	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			Role-Play: Assign students to perform net mending	• Perform net mending Maintain the original mesh size and strength while mending. • Clean and store tools after the task.		**Theories:** The trainee should explain: - • Economic importance of net mending. • Procedures of mending net • Assessment process for the quality of a mended net. **Circumstantial knowledge: Detailed knowledge about:** Understand how environmental conditions (humidity,	• Mending twine • Knife • Scissors • Mesh gauge • Net supporting hook • Sheet bend knot	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
						salt, sunlight) affect the durability and maintenance of fishing nets		
		d) Making hand and line, and long line fishing gears	**Brainstorm:** Guide the students to explain concept of hand and line fishing gears **Demonstrations:** • Conduct a demonstration on how to make hand and line gears • Demonstrate on how to make long line fishing gears	**The trainee should be able to:** • Select appropriate tools, materials, and safety gear • Prepare bait for fishing • Make hand and line fishing gear • Make long line fishing gear • Clean and store tools and	Hand and line, long line fishing made according to the required standards	**Detailed knowledge of:** **Method used:** The student should explain how to make and use hand and long line fishing gears **Principles:** The trainee should explain principles of making hand and line, and long line fishing gears **Theories:** The trainee should explain:	The following tools, equipment and safety gears should be available: - • Handline • First aid kit • Nylon twine • Hooks • Sinkers • Floats • Fishing line	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			Role-Play: Assign students to make line fishing gears	materials after use		• Procedure of making hand and line, and long line fishing gears • Components of hand and line, and long line fishing gears **Circumstantial knowledge: Detailed knowledge about:** • Safety precautions while le making line fishing gears.	• Bits • Tackle box • Knife	
	1.2 Locating suitable area	a) Identifying and locating different	**Brainstorm:** Guide the students to explain concept of	**The trainee should be able to:** • Select working	Located fishing ground/area	**Detailed knowledge of:** **Method used:** The student should explain how to	The following tools, equipment and safety gears	15

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
	for fishing	fishing grounds	identifying and locating suitable fishing grounds **Demonstrations:** Demonstrate on how to identify and locate suitable fishing grounds **Role-Play:** Assign students to identify locate different fishing grounds	tools, equipment, utensils and safety gears • Identify features associated with suitable fishing grounds • Identified fishing grounds • Interpret the readings and images from the fish finder equipment • Clean and store tools and materials after use	conforms to recommended fishery practices	Locate different fishing grounds **Principles:** The trainee should explain principles involved in identification of a suitable fishing area **Theories:** The trainee should explain: - • Importance of identification of fishing area • Physical features of a suitable area for fishing	should be available: - • GPS • Chart plotters • Mobile map • Eco sounder • Net sounder • Satellite imagery • Marine Radar • Trolling motors	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
						Circumstantial knowledge: Detailed knowledge about: • Knowledge on fish breeding and reserved areas • Knowledge on local weather conditions		
		b) Marking identified fishing grounds	**Brainstorm:** Guide the students to identify markers applied to fishing **Demonstrations:** Conduct a demonstration to mark fishing grounds by using different	**The trainee should be able to:** • Select and use appropriate tools, equipment, and safety gear • Use identification tools like GPS, radar, and fish	Identified fishing grounds properly marked	**Detailed knowledge of:** **Method used:** The student should: how to mark fishing grounds **Principles:** The trainee should explain principles involved in using GPS,	The following tools, equipment and safety gears should be available: - • Marker bouys • Flag • High flyers	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			markers according to specific environment **Role-Play:** Assign students to mark identified fishing grounds	finders to identify fishing grounds • Mark identified fishing grounds on charts or digital systems • Clean and store tools and materials after use		radar, and fish finder devices **Theories:** The trainee should explain: - • Importance of proper marking of the identified fishing area • Physical features of good fishing zones • Procedure of using different devices used in identification of fishing grounds **Circumstantial knowledge: Detailed knowledge about:**	• Radar reflectors • Tracers • Coded wire tag • Plotters	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
						Local weather conditions and recognize fish breeding or protected areas		
	1.3 Navigating fishing vessels	a) Preparing tools and equipment for navigation	**Brainstorm:** Guide the students to identify tools and equipment for navigation **Demonstrations:** Conduct a demonstration showing different tools and equipment, and their uses in navigation	**The trainee should be able to:** • Select and prepare all necessary navigation tools and safety equipment • Check functionality of tools and equipment before	Navigation tools and equipment are properly prepared for safe vessel operation	**Detailed knowledge of:** **Method used:** The student should explain how to prepare and check navigation tools and safety gear **Principles:** The trainee should explain principles involved in checking functionality of navigation	The following tools, equipment and safety gears should be available: - • Magnetic compass • GPS • Radar • Electronic	25

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			Role-Play: Assign and lead the students to prepare tools and equipment for navigation	navigation • Clean and store tools and materials after use		tools and equipment **Theories:** The trainee should explain: - • The role of navigation tools in guiding fishing vessels safely • Functions of different tools and equipment used to navigate fishing vessels **Circumstantial knowledge: Detailed knowledge about:** Impacts equipment condition in relation	Chart • VHF Radio • Log book • Navigational light • Binoculars • Map case	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
						to navigation safety		
		b) Navigating dugout canoe	**Brainstorm:** Guide the students to explain concept of navigating dugout canoe **Demonstrations:** Conduct a demonstration by navigate dugout canoe using fishing paddle or an engine **Role-Play:** Assign students to navigate dugout canoe	**The trainee should be able to:** • Select appropriate tools, equipment, and safety gear • Plot navigation routes on a chart • Navigate a dugout canoe safely and effectively • Clean and store tools and materials after use	Dugout canoe Navigated according to recommended fishery practices	**Detailed knowledge of:** **Method used:** The student should explain how to paddle dugout canoes **Principles:** The trainee should explain principles involved in navigating dugout canoe **Theories:** The trainee should explain: - • The effects of wind, tides, and waves on vessel movement • Differences in	The following tools, equipment and safety gears should be available: - • Dugout canoe • Paddles • Long poles	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
						navigating wind driven and motorized canoes **Circumstantial knowledge: Detailed knowledge about:** Understand fuel calculation based on weather and proper use of lifesaving gear		
		c) Navigating double outrigger canoe	**Brainstorm:** Guide the students to explain concept of navigating double outrigger canoe	**The trainee should be able to:** • Select working tools, equipment, utensils and safety gears	Double outrigger canoe navigated as per recommende	**Detailed knowledge of:** **Method used:** The student should explain how to perform skipping of different powered boats	The following tools, equipment and safety gears should be available: -	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			Demonstrations: Conduct a demonstration by navigating a double outrigger canoe with more than one fishing net during fishing practice **Role-Play:** Assign and lead students to navigate double outrigger canoe	• Plot the navigation route on the chart • Navigate a wind driven canoe • Clean and store tools and materials after use	d fishery practice	**Principles:** The trainee should explain principles involved in navigating double outrigger canoe **Theories:** The trainee should explain: - • Features of different types of fishing vessels • Limitations on uses of some fishing vessels **Circumstantial knowledge: Detailed knowledge about:** • swimming and diving	• Double outrigger canoe • Wind driven • Paddle • Navigation chart • Compass	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
						skills • Fuel calculation, and using lifesaving gear.		
		d) Navigating wooden motorized canoe	**Brainstorm:** Guide the students to identify requirements before wooden motorized canoe **Demonstrations:** With a complete safety gear conduct a demonstration by navigating wooden motorized canoe	**The trainee should be able to:** • Select appropriate navigation tools and safety gear • Place engine and tight to the boat • Mix well fuel with oil in a standard ratio • Push fuel mixture into engine and start the engine	Wooden motorized canoe navigated according to standard.	**Detailed knowledge of:** **Method used:** The student should explain how to navigate wooden motorized canoe **Principles:** The trainee should explain principles involved in plotting navigation route **Theories:** The trainee should explain: -	The following tools, equipment and safety gears should be available: - • Outboard engine • Fuel tank • Fuel lines • Paddle • Knife • Navigation chart	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			Role-Play: Assign and lead students to navigate wooden motorized canoe	• Navigate a wooden motorized canoe according to activity or plotted route. • Clean and store tools and materials after use		• Importance of plotting navigation route • Procedure of navigating wooden motorized canoe along the planned route **Circumstantial knowledge: Detailed knowledge about:** • Swimming and diving skills • Competences in using GPS	• Compass	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
	1.4 Performing net fishing	a) Performing ring net fishing	**Brainstorm:** Guide the students to explain concept of ring net fishing **Demonstrations:** Conduct a demonstration on how to harvest fish by using ring net and steps of lifting or surrounding a ring net **Group work:** Assign and lead students to perform ring net fishing in groups	**The trainee should be able to:** • Select the right tools, equipment, and safety gear, • Inspect the gear for any damage and ensure the net has required buoyancy • Load the net into fishing vessel • Locate the fishing ground • Encircle the fishing ground by slowly releasing	Ring net fishing performed in accordance with recommended fisheries standards	**Detailed knowledge of:** **Method used:** The student should explain how to set and monitor ring nets to maximize catch efficiency. **Principles:** The trainee should explain principles involved in performing ring net fishing **Theories:** The trainee should explain: - • The role of attaching bowyers and sinkers to nets	The following tools, equipment and safety gears should be available: - • Ring net • Purse line • Floats • Anchors • Paddles • Ropes • Scoop net	15

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
				the net from the boat. • Close the bottom and gradually perform hauling • Clean and store tools and materials after use		• Discusses the advantages and disadvantages of ring net fishing • Procedure of preparing net for performing ring net fishing **Circumstantial knowledge: Detailed knowledge about:** Environmental precautions and understands the		

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
						availability and cost of materials needed for net making.		
		b) Performing dagaa fishing	**Brainstorm:** Guide the students to explain concept of dagaa fishing **Demonstrations:** Conduct a demonstration on how to harvest dagaa and establish method used in dagaa fishing **Group work:** Assign and lead students to perform dagaa fishing	**The trainee should be able to:** • Select working tools, equipment, utensils and safety gears • Prepare and inspect the fishing boat • Load fishing nets, lamps, fuel, and crew. • Navigate fishing boat to dagaa	Dagaa fishing performed as per recommended fisheries standards	**Detailed knowledge of:** **Method used:** The student should explain how to locate suitable areas for fishing dagaa **Principles:** The trainee should explain principles involved in: determining the correct mesh size for fishing dagaa **Theories:** The trainee should explain: -	The following tools, equipment and safety gears should be available: - • Dagaa nets • Anchors • Lift net • Pressure lamps • Solar light • Paddles • Anchor • Outboard	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			in groups	fishing grounds • Attach source of light • Perform dagaa • Lower the net into the water around the light-concentrated area. • Enclose and haul the net after sufficient accumulation of dagaa • Clean and store tools and materials after use		• The importance of attaching bowyers and sinkers to nets • Ideal vessels and nets for fishing dagaa Features of dagaa fishing zones **Circumstantial knowledge: Detailed knowledge about:** • Environmental and safety precautions	engine • Paddle • Knife	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
		c) Performing gill net fishing	**Brainstorm:** Guide the students to explain concept of gill net fishing **Demonstrations:** Conduct a demonstration on how to harvest fish by using gill net **Group work:** Assign and lead students to perform gill net fishing in groups	**The trainee should be able to:** • Select the right tools, equipment, and safety gear, • Transport gill net to the identified fishing ground • Set the net into the water. • Allow time for fish to enter into the net • Retrieve the net and remove fish • Clean and store tools and	Gill net fishing carried out according to the recommended fisheries standards	**Detailed knowledge of:** **Method used:** The student should explain how to perform gill net fishing . • **Principles:** The trainee should explain principles involved in setting the gill net into the water. **Theories:** The trainee should explain: - • Different types of fishing nets and the materials used to	The following tools, equipment and safety gears should be available: - • Gill net • Bouys • Lead line • Anchors • Knife • Net bins	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
				materials after use		make them • Advantages of gill net fishing **Circumstantial knowledge: Detailed knowledge about:** • Environmental precautions		
		d) Performing purse/small seine fishing	**Brainstorm:** Guide the students to explain concept of Purse/small seine fishing **Demonstrations:** Conduct a demonstration on how to harvest fish through purse/small seine	**The trainee should be able to:** • Select appropriate tools, equipment, utensils, and safety gear • Load the net, ropes, and other gear onto the	Purse seine fishing conducted according to recommended fisheries standards	**Detailed knowledge of:** **Method used:** The student should explain how to set and monitor the purse seine fishing gear properly. **Principles:** The trainee should explain principles	The following tools, equipment and safety gears should be available: - • Netting • Float line • Lead line	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			fishing gears such as the use of traditional fishing method **Group work:** Assign and lead students to perform purse/small seine fishing in groups	fishing vessel. • Navigate fishing vessel to located fishing ground • Put purse seine nets into water by create parallel line • After six hours start to haul the seine from water in series • Arrange well the seine in a boat or net drum • Clean and store tools and materials after use		involved in pursing or closing the bottom line of the net. **Theories:** The trainee should explain • Requirements for performing purse / small seine fishing • Merits and demerits of purse / small seine fishing **Circumstantial knowledge: Detailed knowledge about:** • Preservation of the	• Purse rings • Purse line • Purse seine winch • Net drum • Net skiff • Marker bouys	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
						captured fishes		
		e) Performing lift and scoop net fishing	**Brainstorm:** Guide the students to explain concept of scoop net fishing **Demonstrations:** Conduct a demonstration on how to harvest fish by using lift and scoop net either in fish pond or cage **Group work:** Assign and lead students to Perform lift and scoop net fishing	**The trainee should be able to:** • Select the correct tools, equipment, utensils, and safety gear • Select a fishing spot (an area with visible or known fish activity) • Lower a square or rectangular net horizontally into the water using a frame or poles. • Use light, bait, or	Lifting and net scooping fishing performed according to recommended fisheries standards	**Detailed knowledge of:** **Method used:** The student should explain how to perform lifting and scooping net fishing **Principles:** The trainee should explain principles involved in setting out of scoop net into water **Theories:** The trainee should explain: - • Types of fishing net • Materials used for making fishing nets	The following tools, equipment and safety gears should be available: - • Scoop net • Portable liftnet • Ropes • Winches • Net needle • Baits • Lights	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
				wait patiently for fish to gather above the net • Raise the net vertically and swiftly to trap the fish inside. • Collect the caught fish from the net. • Clean and store tools and materials after use		• Importance of lift and scoop net fishing • Recommended net mesh size for lift and scoop net fishing method **Circumstantial knowledge: Detailed knowledge about:** • Availability and cost of net-making materials.		
		f) Performing trawl net fishing.	**Brainstorm:** Guide the students to explain concept of trawl net fishing	**The trainee should be able to:** • Select appropriate fishing tools, equipment, and	Trawl net fishing conducted according to recommende	**Detailed knowledge of:** **Method used:** The student should explain how to : • Identify suitable areas for trawl fishing	The following tools, equipment and safety gears should be available: -	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			Demonstrations: Conduct a demonstration on how to harvest fish by using trawl fishing boat and to lift the trawl net during hauling **Group work:** Assign and lead students to perform trawl net fishing	safety gear performing trawl net fishing. • Load all requirements into a fishing vessel • Navigate the vessel to fishing ground with a high concentration of fish • Lower the net into the water from the stern (back) of the boat. • Release the trawl	d fisheries standards	• Monitor the trawl net during operation. **Principles:** The trainee should explain principles involved in setting the trawl net into the water and identify **Theories:** The trainee should explain: - • Suitable time and season for trawling • Types of fishing net for trawl fishing • Merits and demerits	• Trawl nets • Cod End • Trawl winches • Head rope • Foot rope • Ground gears • Tickler chain • Otter boards • Net drum • Net sounder • Echo sounder	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
				doors to keep the net open horizontally. • Adjust weights or floats for bottom or midwater trawling. • Trawl the net in a stead speed for a time • Haul the net and remove the catch		of using trawl net for fishing **Circumstantial knowledge: Detailed knowledge about:** • Demonstrate awareness of environmental precautions and understand the cost and availability of net-making materials		
	1.5 Performing hook/ angling fishing	a) Performing hand and line fishing	**Brainstorm:** Guide the students to explain concept of hand and line fishing	**The trainee should be able to:** • Select suitable fishing tools,	Angling fishing performed in line with	**Detailed knowledge of:** **Method used:** The student should explain how to: • Perform hand and line	The following tools, equipment and safety gears should be	15

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			Demonstrations: Conduct a demonstration on how to harvest fish in pond or natural environment by hand and line **Group work:** Assign and lead students to perform hand and line fishing	equipment, safety gear, • Attach the bait (worms, insects, or artificial lures) securely to the hook. • Throw or drop the baited hook into the water to reach the desired fishing spot. • Wait for fish to bite a bait • Pull the line or rod quickly to set the hook in the fish's	recommended standards	fishing • Perform long line fishing and fly-fishing, **Principles:** The trainee should explain principles involved in selection and fixing of a bait **Theories:** The trainee should explain: - • Effects of wind and waves • Types and sizes of hooks, rods, and lines,	available: - • Handline • First aid kit • Nylon twine • Hooks • Sinkers • Floats • Fishing rod • Fishing reel • Fishing line • Bits • Tackle box	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
				mouth. • Remove captured fish from the line • Clean and store tools and materials after use		• Importance of releasing unwanted fish back into the water **Circumstantial knowledge: Detailed knowledge about:** • Awareness of safety measures and the need to handle dangerous fish with care.		
		b) Performing long line fishing	**Brainstorm:** Guide the students to explain concept of long line fishing	**The trainee should be able to:** • Select appropriate fishing tools, equipment, and	Long line fishing performed according to recommende	**Detailed knowledge of:** **Method used:** The student should explain how to perform long line fishing, including baiting and	The following tools, equipment and safety gears should be available: -	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			Demonstrations: Conduct a demonstration on how to harvest fish by using long line and arrange the line during fishing practice **Group work:** Assign and lead students to perform long line fishing	safety gear, • Identify fishing area • Set lines with bait staring from the main line • Attach floatation devices and weights to keep the line at the desired depth • Let long lines to stay in water for a period. • Retrieve the lines and remove the captured fishes	d fisheries standards	setting the line. **Principles:** The trainee should explain principles involved in setting fishing long lines **Theories:** The trainee should explain: - • How wind and waves affect fishing • Hook sizes for different species • Selection of attractive bait • Advantages of long line fishing	• Mainline • Hooks • Long line • Anchor • Lights • Sinkers • Baits • Tackle box	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
				• Clean and store tools and materials after use		**Circumstantial knowledge: Detailed knowledge about:** • Safety precautions and handling of dangerous fish.		
		c) Performing sport fishing	**Brainstorm:** Guide the students to explain concept of sport fishing **Demonstrations:** Conduct a demonstration on how to harvest fish in sport fishing **Group work:**	**The trainee should be able to:** • Select proper tools, safety gear • Travel to reach the identified area for sport fishing • Assemble the rod and real then fix the bait • Cast the line into	Sport fishing performed as per the set fisheries standards	**Detailed knowledge of:** **Method used:** The student should explain how to perform sport fishing **Principles:** The trainee should explain principles involved in identifying fishing ground for sports fishing	The following tools, equipment and safety gears should be available: - • Spin caster rod • Bait caster rod • Tackle boxes • Landing net	

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			Assign and lead students to perform sport fishing	water • Wait for a fish to bite while keeping the line tight • Set the hook with a firm tug after bite of a fish • Pull the catch outside the land.		**Theories:** The trainee should explain: - • Effect wind/waves in sports fishing • Differences between sport and angling fishing **Circumstantial knowledge: Detailed knowledge about:** • Recognize safety practices and precautions for handling dangerous fish.	• Fish finder • Fishing vest	

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	1.6 Perform basket fishing	a) Preparing baits for basket fishing	**Brainstorm:** Guide the students to explain concept of bait **Demonstrations:** Conduct a demonstration how to prepare baits for basket fishing **Group work:** Assign and lead students to prepare baits for basket fishing	**The trainee should be able to:** • Select proper tools, safety gear • Identify bait types • Prepare ingredients and mix them to make attractive, smelly baits for basket fishing. • Clean and store tools and materials after use	Basket fishing baits properly prepared.	**Detailed knowledge of:** **Method used:** The student should explain how to prepare baits with attractive smelling to fish **Principles:** The trainee should explain principles involved in making smelling baits **Theories:** The trainee should explain: - • Types of fish baits and ingredients used to prepare them	The following tools, equipment and safety gears should be available: - • Mixed ingredients • Bucket • Mesh bags	30

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						• Prepare of fishing bait **Circumstantial knowledge: Detailed knowledge about:** • Environmental care when setting traps and handle dangerous fish cautiously.		
		b) Setting basket for trapping fish	**Brainstorm:** Guide the students to explain concept of trapping fish by using baskets **Demonstrations:**	**The trainee should be able to:** • Select working tools, equipment, utensils and safety gears • Search and mark	Setting basket/trap fishing performed as per required fisheries standards	**Detailed knowledge of:** **Method used:** The student should explain how to set basket for trapping fish: **Principles:** The trainee should explain principles	The following tools, equipment and safety gears should be available: - • Baiting	

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			Conduct a demonstration on how to set basket for trapping fish **Group work:** Assign and lead students to set basket for trapping fish	ideal place for fixing a trap/basket • Set baskets / trap in a water • Mark the point where trap was set Release basket from water and collect fish • Remove the catch from a basket		involved in setting traps in proper channels **Theories:** The trainee should explain: - • Advantages of performing basket fishing • Sizes of doors and its positioning to prevent escaping of fish **Circumstantial knowledge: Detailed knowledge about:** • Set traps carefully to avoid damaging shore	needle • Baiting scissors • Bait crusher • Bait punches • Bucket • Bait strainer • Bait holder • Mesh bags	

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2.O Handling harvested fish	2.1 Handling live fish	a) Identifying types of shell fish	**Brainstorm:** Guide the students to brainstorm on handling and identifying types of harvested live shell fish **Demonstrations:** Demonstrate how to different types of shell and fin fish. **Role-Play:** Assign and lead students handle and differentiate live shell and fin fish **Field Visit:** Take students to nearby	**The trainee should be able to:** • Select appropriate tools and equipment • Fill tanks with clean water, • Ensure proper air and water circulation • Sort and differentiate shell fish, • Monitor water quality and fish health, and clean all tools and equipment.	Live shell fish properly handled and identified	**Detailed knowledge of: Method used:** The trainee should explain how to handle a identify live shellfish **Principles:** The trainee should explain principles involved in identifying types of shell fish **Theories:** The trainee should explain: - • Features of shell fish • Handling live shell fish **Circumstantial**	The following tools, equipment and safety gears should be available: - • Shellfish measuring tool • DNA Barcoding • Images • Taxonomic references • Microscope	20

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			fish farms, cold storage, or markets to observe real operations.			**knowledge:** **Detailed knowledge about:** • Safety precautions in hauling and identifying live fish.		
		b) Performing fish grading	**Brainstorm:** Guide the students to brainstorm on the criteria used in grading harvested live fish **Demonstrations:** Demonstrate how to grade harvest live fish	**The trainee should be able to:** • Select proper tools and equipment • Clean fish handling vessels • Fill tanks with clean water and provide aeration system	Fish grading performed according to recommended fishery practices	**Detailed knowledge of:** **Method used:** The trainee should be able to explain how to handle and grade fish **Principles:** The trainee should explain principles involved in grading fish	The following tools, equipment and safety gears should be available: - • Grading table • Weighing scale • Hand graders	

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			Group Discussion: Divide students into small groups and lead them to discuss on live fish grading. Encourages teamwork and critical thinking **Practical Sessions:** Allow students to perform hands-on activities, such as acclimatization, sorting and grading according to the size and age during harvest	• Sort and grade fish based on size or health • Monitor water quality, fish condition and maintain hygiene of equipment.		**Theories:** The trainee should explain: - Economic importance of selling live fish • Procedure of grading fish • Factors to consider in grading fish **Circumstantial knowledge: Detailed knowledge about:** • Cost factors and the importance of accessing reliable markets for live fish sales.	• Sampling net • Electronic counter • Bio scanners	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
		c) Handling shell and fin fish	**Brainstorm:** Guide the students to brainstorm the recommended procedure for handling live shell and fin fish **Demonstrations:** demonstrate different ways of handling live shell and fin fish after harvesting **Role-Play:** Assign and lead students to practice handling of harvested live shell and	**The trainee should be able to:** • Select tools and equipment • Clean vessels for handling fish • Fill in clean water to allow growth in a required level • Make provision of air and water circulation • Handle shell fish • Perform sorting and grading • Monitor water quality	Handling live shell and fin fish performed as per recommended fishery practices	**Detailed knowledge of:** **Method used:** The trainee should explain how to handle live shell and fin fish **Principles:** The trainee should explain principles involved in feeding stored shell and fin fish **Theories:** The trainee should explain: - • Economic importance of selling live fish • Types of fish which can be sold live	The following tools, equipment and safety gears should be available: - • Fillet knife • Boning knife • Deba knife • Fish scaler • Fishbone tweezers • Fish shears • Oyster knife • Clam Oyster • Crab pickers • Cutting board	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			fin fish	• Monitor performance of fish.		• Feed stored live fish **Circumstantial knowledge: Detailed knowledge about:** Consciousness in costs involved and reliable markets for live fish business	• PPE • Weigh scale	
	2.2 Handling non-alive fish	a) Sorting captured fish	**Brainstorm:** Guide the students to brainstorm the criteria sorting non-alive harvested fish **Demonstrations:** Demonstrate how to sort non-live fish	**The trainee should be able to:** • Select tools, equipment and machines • Identify different types of fish • Perform sorting and	Handling of non-alive fish performed as per recommended fisheries practices	**Detailed knowledge of: Method used:** The trainee should be able to explain how to sort fish **Principles:** The trainee should explain principles involved in sorting non-alive fish	.The following tools, equipment and safety gears should be available: - • Buckets • Freezers • Ice maker	30

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			Role-Play: Assign and lead students to sort non-live fish	grading of fish • Clean fish • Perform packaging of fish • Clean and store tools and equipment		**Theories:** The trainee should explain: - • Advantages of maintaining cold chain • Procedure of sorting non-alive fish • Organoleptic assessment • Rigor mortis stages **Circumstantial knowledge: Detailed knowledge about**: • Microbiology basic knowledge in fish preservation	• Cool boxes • Weighing scale • Safety boots • Gloves	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
		b) Performing Chilling	**Brainstorm:** Guide the students to brainstorm on methods used to handle non-alive fish **Demonstrations:** Conduct a demonstration on how to chill non-live fish **Role-Play:** Assign and lead students to chill non-live fish	**The trainee should be able to:** • Select tools, equipment and machines • Perform sorting and grading of fish • Perform cooling or Chilling • Perform packaging of fish • Clean and store tool and equipment.	Chilling of non-alive fish performed as per Recommended preservation standards	**Detailed knowledge of:** **Method used:** The trainee should be able to explain how to chill fish **Principles:** The trainee should explain principles involved in cold preservation and handling chilled fish: **Theories:** The trainee should explain: - •Organoleptic assessment • Rigor mortis stages • Monitoring quality of chilled fish	The following tools, equipment and safety gears should be available: - • Flake ice machine • Tube ice machine • Plate ice machine • Chilling tanks • Cold storage rooms	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
						Circumstantial knowledge: **Detailed knowledge about:** • Microbiology basic knowledge in fish preservation	• Vacuum package machine • Weighing balance	
		c) Performing freezing	**Brainstorm:** Guide the students to brainstorm into freeze harvested non-alive fish **Demonstrations** Demonstrate on how to freeze non-live fish	**The trainee should be able to:** • Select tools, equipment and machines • Perform sorting and • grading of fish • Clean fish	Freezing of fish performed as per Recommended preservation standards	**Detailed knowledge of:** **Method used:** The trainee should be able to explain how to freeze fish **Principles:** The trainee should explain principles involved in freezing fish	The following tools, equipment and safety gears should be available: - • Blast freezers • Plate freezers • Cryogenic	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			Role-Play: Assign students specific roles, such as importance of freezing non-alive fish before and after harvests	• Freezing fish • Clean and store tools and equipment		**Theories:** The trainee should explain: - • Advantages of maintaining a cold chain in fish processing **Circumstantial knowledge: Detailed knowledge about:** • Basic microbiology knowledge related to fish preservation, including how bacteria cause spoilage and how to minimize	freezers • Flake ice machine • Cold storage room	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
						contamination		
		d) Performing blasting	**Brainstorm:** Guide the students to brainstorm the criteria used to handle non-alive fish through blasting **Demonstrations:** Conduct a demonstration on blasting process for non-live fish **Role-Play:** Assign and lead students to perform blasting process for non-live fish	**The trainee should be able to:** • select proper tools, machines, and equipment • Perform blast and sorting fish • Clean and store all tools and equipment	Fish blasted as per the recommended preservation standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to blast fish **Principles:** The trainee should explain principles involved in blasting fish **Theories:** The trainee should explain: - • The importance of blasting fish • Procedure of performing blasting	The following tools, equipment and safety gears should be available: - • Explosive devices • Ignition sources • Collection gear	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
						Circumstantial knowledge: Detailed knowledge about: Basic microbiology in fish preservation on how microorganisms affect fish and the role of freezing in preventing spoilage.		
	2.3 Transporting harvested fish	a) Performing conditioning of live catch	**Brainstorm:** Guide the students to brainstorm on conditioning process of harvested catch **Demonstrations:** Conduct a demonstration on how to condition	**The trainee should be able to:** • Select the right tools and equipment, • Make ice blocks or flakes condition live fish, Pack them in container	Conditioning of fish performed as per required set standards.	**Detailed knowledge of: Method used:** The trainee should be able to explain how to condition live catch **Principles:** The trainee should explain principles	The following tools, equipment and safety gears should be available: - • Holding tanks • Livewell tank	15

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			different types of harvested live **Role-Play:** Assign and lead students to perform conditioning of live fish **Field visit** Student to visit places where live catches are conditioned before exported to far away markets	• Monitor cooling temperature • Clean and store all equipment after use.		involved in conditioning live catch of fish. **Theories:** The trainee should explain: • Types of containers suitable for conditioning of fish • Reasons for maintaining temperature control. • Importance of conditioning live catch before transportation. **Circumstantial knowledge: Detailed knowledge about:** Understand microbial	• Mesh bags • Plastic bags • Aerators • Water pump • Water chiller • Medical gloves • Refractrometer • Fish grippers	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
						testing to ensure the quality and safety of transported fish batches.		
		b) Packing live catches for transportation	**Demonstrations:** Conduct a demonstration on how to pack live catches ready for transportation **Quiz/Game:** Prepare quiz for students to identify the correct tools and procedures for packing and transporting different types of catch **Role-Play:**	• **The trainee should be able to:** • Select tools, equipment and machines • Make ice blocks/flakes • Condition live fish • Pack live fish in containers • Monitor cooling	Packaging of live fish performed as per required set standards.	**Detailed knowledge of:** **Method used:** The trainee should be able to explain how to pack live catch **Principles:** The trainee should explain principles involved in maintaining air circulation in live catch packaging's **Theories:** The trainee should explain: • Packaging of live and non- alive fish	The following tools, equipment and safety gears should be available: - • Fish transport bags • Square bottom bags • Buckets • Compressed oxygen tank • Thermometer	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			Assign and lead students to practice packaging of live catches **Field Visit:** The trainer prepare tour for students to visit a live fish market or transport van for real-world observation	temperature • Clean and store tools and equipment		• Importance of proper packaging of fish • Recommended packaging materials for fish packaging **Circumstantial knowledge: Detailed knowledge about:** • Microbial test of transported batch of fish		
		c) Transporting live catch	**Demonstrations:** Conduct a demonstration on how to transport live catch **Individual assignments:**	**The trainee should be able to:** • Select tools, equipment and machines • Make ice	Transportation of live fish performed as per required set	**Detailed knowledge of: Method used:** The trainee should be able to explain maintain air circulation in live fish containers	The following tools, utensils, equipment • Plastic bags • Aerators	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			Students assemble and prepare live fish transport containers and design a plan to move live fish from pond to market **Field Visit:** The trainer prepare tour for students to visit a live fish market or transport van for real-world observation	blocks/flakes • Condition live fish • Pack live fish in containers • Load live catch packaging's into a van • Monitor cooling temperature during transportation • Clean and store tools and equipment	standards	**Principles:** The trainee should explain principles involved in transportation of live fish **Theories:** The trainee should explain: - • Importance of proper transportation of fish • Reasons of maintain cold chain **Circumstantial knowledge: Detailed knowledge about:** Microbial test of transported	• Refrigerated van • Livewell container • Water testing kits • Thermometer	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
						batch of fish		
		d) Transporting frozen catch	**Brainstorm:** Guide the students to brainstorm on transportation methods for frozen catch **Demonstrations:** Conduct a demonstration on how to transport frozen catch **Role-Play:** Assign and lead students to practice transportation of frozen fish	**The trainee should be able to:** • Select tools, equipment and machines • Make ice blocks/flakes • Pack non - alive fish in boxes/containers • Load frozen packaging's into a van • Monitor cooling temperature • Clean and store tool	Transportation of Frozen fish performed as per required set standards	**Detailed knowledge of:** **Method used:** The trainee should be able to explain how to transport frozen fish **Principles:** The trainee should explain principles involved in: • Maintaining cold chain • Packaging live fish **Theories:** The trainee should explain: - • Recommended containers for packaging	The following tools, equipment and safety gears should be available: - • Freezer van • Mobile cold room • Vacuum packaging • Thermometer • Ice cubes	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
				and equipment		frozen fish **Circumstantial knowledge: Detailed knowledge about:** • Microbial test of transported batch of fish.		
3.0 Processing fish	3.1 Preparing fish for processing	a) Performing sorting	**Brainstorm:** Guide the students to brainstorm the importance of sorting fish **Demonstrations:** Conduct a demonstration on how to sort different	**The trainee should be able to:** • Select tools, equipment and safety gear • Perform sort fish • Isolate and remove spoiled fish	Sorting fish for processing performed as per required standards	**Detailed knowledge of: Method used:** The trainee should explain how to sort fish for processing purposes: **Principles:** The trainee should explain principles involved in	The following tools, equipment and safety gears should be available: - • Fish grander • Grading net • Sorting table	20

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			types of fish **Field Visit:** The trainer prepare tour for students to visit the area where fish processing is performed **Role-Play:** Assign students specific roles, sorting fish for different requirements	• Remove unwanted dirty or debris • Grade fish according size/ species/ quality • Keep records • Clean and store tools and equipment.		sorting fresh and dry fish for processing **Theories:** The trainee should explain: - • Importance of sorting fish before processing • Consequences of improper handling of fish for processing. • Characteristics of spoiled fish. **Circumstantial knowledge: Detailed knowledge about:** • Carefulness in sorting	• Scoop net • Sorting bowls • Weigh sorting machine • Camera sorting machine	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
						fish as there are sharp bones which can cause serious injury to handlers		
		b) Conducting organoleptic test	**Brainstorm:** Guide the students to brainstorm on performing organoleptic test of fish **Individual assignments:** Students to make test organoleptic test of fish	**The trainee should be able to:** • Select tools, equipment and safety gear • Identify abnormal colour of fish • Perform smell test • Test texture of fish • Isolate and remove spoiled fish	Organoleptic test properly conducted	**Detailed knowledge of:** **Method used:** The trainee should explain how to perform fish organoleptic test **Principles:** The trainee should explain principles involved in identifying spoiled fish through organoleptic test **Theories:** The trainee	The following tools, equipment and safety gears should be available: - • Good lighting • Camera • Magnifying glass • Trays • Artificial nose	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
				• Remove unwanted dirty or debris • Keep records		should explain: - • Importance performing organoleptic test • Consequences of improper handling of fish for processing. **Circumstantial knowledge: Detailed knowledge about:** Carefulness in cleaning and handling fish	• Finger / hand • Stainless steel • Cutting board • Weigh scale • Thermometer	
		c) Grading fish	**Brainstorm:** Guide the students to brainstorm on how to grade fish **Demonstrations:** Conduct a demonstration	**The trainee should be able to:** • Select tools, equipment and safety gear • Weigh fish	Fish graded as per market standard requirements	**Detailed knowledge of:** **Method used:** The trainee should explain how to• grade fish **Principles:** The trainee	The following tools, equipment and safety gears should be available: -	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			on how to grade different types and categories of fish **Group Discussion:** Divide students into small groups to discuss the key concept of fish grading	• Perform thawing • Sort fish • Isolate and remove spoiled fish • Grade fish with required grader • Keep records		should explain principles involved in grading different types of fish **Theories:** The trainee should explain: - • Importance of grading fish • Markets for high quality grades of fish **Circumstantial knowledge: Detailed knowledge about:** • Carefulness in cleaning and handling	• Hand graders • Belt graders • Screen grader • Wheel grader	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
						fish		
		d) Performing scaling	**Brainstorm:** Guide the students to brainstorm on the used methods of scaling fish **Demonstrations:** Conduct a demonstration showing the importance of scaling fish during processing and help to reduce rigor mortis to the fish product **Group Discussion:** Divide students into small groups and lead	**The trainee should be able to:** • Select tools, equipment and safety gear • Perform washing fish • Perform scaling • Splash water for • Cleaning • Keep records	Fish scaling performed as per the required standards	**Detailed knowledge of:** **Method used:** The trainee should explain how to perform scaling of fish: **Principles:** The trainee should explain principles involved in scaling fish **Theories:** The trainee should explain: - • Importance of scaling fish • procedure of scaling fish	The following tools, equipment and safety gears should be available: - • Handheld scaler • Fish comb • Fish scale brush • Knife • Corded Electric scalers • Fish tweezers	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			them to discuss the key concept of scaling fish **Quiz:** Prepare quiz for students to perform the activities related with fish scaling such as procedures of fish scaling			**Circumstantial knowledge: Detailed knowledge about:** Carefulness in scaling process, as there are sharp bones which can cause serious injury to handlers		
		e) Performing gutting clean fish	**Brainstorm:** Guide the students to brainstorm on the importance of gutting **Demonstrations:** Conduct a demonstration on how to perform	**The trainee should be able to:** • Select tools, equipment and safety gear • Perform washing fish • Perform scaling	Gutting of Fish performed as per required standards	**Detailed knowledge of: Method used:** The trainee should explain how to perform gutting of different fish species **Principles:** The trainee should explain principles	The following tools, equipment and safety gears should be available: - • Gutting knife • Fillet knife	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			gutting of fish **Role-Play:** Assign students specific roles of performing gutty clean fish by isolate and remove spoiled fish through organoleptic test	• Perform gutting • Remove the internal organs • Splash water for cleaning • Release fish to processing room or out to the sun for drying • Keep records		involved in removing the internal organs of fish **Theories:** The trainee should explain: - • Procedure of gutting fish • Economic uses of gutting materials **Circumstantial knowledge: Detailed knowledge about:** Carefulness in gutting fish as there are sharp bones which can cause serious injury to handlers	• Fish scaler • Fish comb • Fish scale brush • Tweezers • Cutting board • Bucket	
	3.2 De-boning e	a) Preparing fish fillet	**Brainstorm:** Guide the students to	**The trainee should be able to:**	Fish fillet prepared as	**Detailed knowledge of: Method used:** The trainee	The following tools, equipment	15

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
	fish		brainstorm on the importance of making fish cuts **Demonstrations:** Conduct a demonstration on how to make different fish cuts **Role-Play:** Assign students specific roles of making fish fillet	• Select tools, equipment and safety gear • Perform washing fish • Perform scaling • Cut fish into required portions • Remove fillet • Trim fillets • Weigh fish products • Clean and store tools and equipment	per market's standard requirements	should be able to explain how to prepare fish fillet **Principles**: The trainee should explain principles involved in fish de boning and filleting. **Theories:** The trainee should explain: - • Uses of fish oil and grinded fish • Utilization of fish bones **Circumstantial knowledge: Detailed knowledge about:**	and safety gears should be available: - • Fillet knife • Cutting board • Fish bone pliers • Medical gloves • Fish scaler • Stainless steel table	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
						culinary uses of fish fillet and other edible fish products		
		b) Prepare fish chest	**Brainstorm:** Guide the students to brainstorm on processes involved in preparation of fish chest **Demonstrations:** Conduct a demonstration on how to prepare fish chest **Role-Play:** Assign students specific roles of preparing fish	The trainee should be able to: • Select tools, equipment and safety gear • Perform washing fish • Perform scaling • Cut fish into required portions • Prepare chest • Weigh fish products • Pack and store	Fish chest prepared as per market 's standard requirements	**Detailed knowledge of: Method used:** The trainee should be able to explain how to prepare fish chest **Principles**: The trainee should explain principles involved in de boning and preparing fish chest **Theories:** The trainee should explain: - • Importance of selling fish in form of chest	The following tools, equipment and safety gears should be available: - • Forceps • Cutting board • Nippers • Medical gloves • Aluminum tables • Knife	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			chest	fish product		**Circumstantial knowledge: Detailed knowledge about:** Uses of fish fillet and other edible fish products		
		c) Processing fish skin	**Brainstorm:** Guide the students to brainstorm on the importance of processing fish skin **Demonstrations:** Conduct a demonstration on how to process fish ski **Role-Play:** Assign students specific	**The trainee should be able to:** • Select tools, equipment and safety gear • Perform washing fish • Perform scaling • Check quality of skin • Trim the skin	Fish skin processing performed as per recommended standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to grind fish skin **Principles:** The trainee should explain principles involved in tanning fish skin into leather. **Theories:** The trainee	The following tools, equipment and safety gears should be available: - • Fish scalers • Cutting board • Medical gloves • Aluminum	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			roles of processing fish skin	• Weigh fish skin • Pack and store fish product		should explain: - • Procedure for preparing fish skin **Circumstantial knowledge: Detailed knowledge about:** Possible environmental pollution due to processing of in-edible fish products	tables • Knife • Weighing scale • Skininng machine	
		d) Preparing fish oil	**Brainstorm:** Guide the students to brainstorm on the importance of fish oil **Demonstrations:** Conduct a demonstration	**The trainee should be able to:** • Select tools, equipment and safety gear • Perform washing fish	Fish oil prepared as per recommended standards	**Detailed knowledge of:** **Method used:** The trainee should be able to explain how to make fish oil **Principles**: The trainee should explain principles	The following tools, equipment and safety gears should be available: - • Fish cookers	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			on how to prepare fish oil **Role-Play:** Assign students specific roles of preparing fish oil	• Perform scaling • Chop into small pieces Cook the chopped pieces • Add little water to avoid burning • Remove solids from oil by filtering • Separate oil and water • Clean and store tools and equipment		involved in separation of fish oil from other residues and water. **Theories:** The trainee should explain: - • Type of fish for making fish oil • Uses of fish oil **Circumstantial knowledge: Detailed knowledge about:** • Odour of the fish oil	• Screw press • Vacuum dryer • Fillet presses • Medical gloves • Storage tanks	
	3.3 Performing dry curing of fish	a) Preparing smoked fish	**Brainstorm:** Guide the students to brainstorm on how to	**The trainee should be able to:** • Select tools,	Smoked fish performed as per required	**Detailed knowledge of: Method used:** The trainee should be	The following tools, equipment and safety gears	15

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			perform dry curing of fish smoke fish **Demonstrations:** Conduct a demonstration showing the important smoked fish **Role-Play:** Assign students specific roles of performing smoked fish and maintain its quality	equipment and safety gear • Perform washing fish • Perform scaling • Perform gutting • Perform salting and sun drying • Perform smoking fish in smoking kiln • Remove smoked fish and arrange to the processing shelf or trays • Pack and store fish product	market standards	able to explain how to smoke fish **Principles:** The trainee should explain principles involved in smoking fish. **Theories:** The trainee should explain: - • Effects of smoke in dried fish • Comparison between smoking and sun drying of fish **Circumstantial knowledge Detailed knowledge about:**	should be available: - • Electric smoker • Wooden smoker • Knife • Weighing scale • Stainless steel or Aluminum table • Fish comb • Fish harmer • Washing brushes	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
				• Clean and store tools and equipment.		Carefulness on selecting fire woods for smoking as some trees produce carcinogenic smoke		
		b) Dissecting fish	**Brainstorm:** Guide the students to brainstorm on the importance of dissecting fish **Demonstrations:** Conduct a demonstration on how to dissect fish **Role-Play:** Assign students specific roles of dissecting fish	**The trainee should be able to:** • Select tools, equipment and safety gear • Perform washing fish • Perform scaling • Dissect fish and remove internal organs • Pack and store fish product	Fish dissection performed as per required market standards	**Detailed knowledge of:** **Method used:** The trainee should be able to explain how to perform dissection of fish **Principles:** The trainee should explain principles involved in dissecting fish. **Theories:** The trainee should explain: - • Advantage of dissecting	The following tools, equipment and safety gears should be available: - • Sharp scissor • Fish trays • Cutting board • Medical gloves • Tweezers • Dissection	

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				Product Assessment	Product/Services Assessment	Knowledge Assessment		
				• Clean and store tools and equipment.		fish • Preservation of fish dissection portions **Circumstantial knowledge Detailed knowledge about:** Safety precautions in making dissection of fish	tray	
		c) Preparing sun dried fish	**Brainstorm:** Guide the students to brainstorm on the importance of fish sun drying **Demonstrations:** Conduct a demonstration on how to perform fish	**The trainee should be able to:** • Select tools, equipment and safety gear • Perform washing fish • Perform scaling	Drying offish performed as per required market standards	**Detailed knowledge of:** **Method used:** The trainee should explain how to perform sun drying **Principles:** The trainee should explain principles involved in preparation of	The following tools, equipment and safety gears should be available: - • Knife • Fish scaler	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			sun drying **Role-Play:** Assign students specific roles of performing sun drying of fish	• Perform gutting • Perform salting and sun drying • Pack and store fish product • Clean and store tools and equipment.		fish for sun drying. **Theories:** The trainee should explain: - • Comparison between smoking and sun drying grinded fish **Circumstantial knowledge Detailed knowledge about:** • Carefulness on selecting area for drying to avoid contamination of fish.	• Cutting board • Bucket • Weighing balance • Drying racks • Solar dryer • Mesh nets • Bamboo poles	
		d) Frying fish	**Brainstorm:** Guide the students to	**The trainee should be able to:**	Fish frying performed as	**Detailed knowledge of: Method used:** The trainee	The following tools, equipment	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			brainstorm on importance of frying fish. **Demonstrations:** Conduct a demonstration on how to fry fish **Role-Play:** Assign students specific roles of frying fish	• Select tools, equipment and safety gear • Perform washing fish • Perform scaling • Perform gutting • Cutting fish into required size • Perform salting and sun drying to reduce water content • Frying fish with clear cooking oil • Clean and store tools and	per required market standards	should be explained how to fry fish **Principles:** The trainee should explain principles involved in frying fish. **Theories:** The trainee should explain: - • Recommended types of fish for frying • Preservation of fried fish **Circumstantial knowledge Detailed knowledge about:**	and safety gears should be available: - • Fryer • Fish spatula • Deep fry thermometer • Metal mesh skimmer • Long fish spoon • Cutting board	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
				equipment		• Carefulness in frying fish to avoid burning from hot frying oil		
	3.4 Performing salt curing of fish	a) Performing brining	**Brainstorm:** Guide the students to brainstorm on importance of brining fish **Demonstrations:** Conduct a demonstration on how to brine fish **Role-Play:** Assign students specific roles of g brining fish	**The trainee should be able to:** • Select tools, equipment and safety gear • Perform washing fish • Perform scaling • Perform gutting • Calculate the ratio of salt concentration and the number of fish required for	Fish salt curing performed as per required market standards	**Detailed knowledge of:** **Method used:** The trainee should be able to explain how to perform brining **Principles:** The trainee should explain principles involved in salt curing of fish **Theories:** The trainee should explain: - • Merits of fish brining • Salt application ratio	The following tools, equipment and safety gears should be available: - • Refractrometer • Measuring cups and spoons • Thermometer • Weighing scale	15

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
				brining • Perform fish brining and sun drying to reduce water content • Clean and store tools and equipment		**Circumstantial knowledge: Detailed knowledge about**: • Effects of over salting fish during curing process.	• Digital clock	
		b) Performing dry salting	**Brainstorm:** Guide the students to brainstorm on the importance of dry salting **Demonstrations:** Conduct a demonstration on how to perform fish dry salting **Role-Play:**	**The trainee should be able to:** • Select tools, equipment and safety gear • Perform washing fish • Perform scaling • Perform gutting	Fish dry salt curing performed as per required market standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to perform fish dry salting **Principles:** The trainee should explain principles involved in dry salt curing	The following tools, equipment and safety gears should be available: - • Cutting table • Knife • Refractromet	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			Assign students specific roles of performing fish dry salting	• Perform salting and sun drying to reduce water content to the fish • Clean and store tools and equipment		of fish **Theories:** The trainee should explain: - • Merits of fish dry salting • Salt application rate • Storage of dry salted fish **Circumstantial knowledge: Detailed knowledge about**: • Effects of over salting fish during curing process.	er • Thermometer • Weighing scale • Mesh dryer table	
	3.5	a) Identifying	**Brainstorm:**	**The trainee should be**	Fish canning	**Detailed knowledge of:**	The following	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
	Performing canning of fish	tool and equipment for canning	Guide the students to brainstorm on the importance of fish canning **Field and industrial visit:** Organizes study tour visit to supermarkets and fish canning industries	**able to:** • Select tools, equipment and safety gear • Identify tool and equipment that may applied in canning fish • Clean and store tools and equipment.	performed as per required set standards	**Method used:** The trainee should be able to explain how to perform canning **Principles:** The trainee should explain principles involved in: • Shelf life of canned fish **Theories:** The trainee should explain: - • Economic importance of canning fish • Recommended fish species for canning **Circumstantial**	tools, equipment and safety gears should be available: - • Pictures • Videos • Good lighting • Hand (touch) • Diagrams	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
						knowledge: Detailed knowledge about: Limitations associated with establishment of fish canning industries.		
		b) Preparing fish for canning	**Brainstorm:** Guide the students to brainstorm on the methods used prepare fish for canning **Demonstrations:** Conduct a demonstration on how to prepare fish for canning **Role-Play:** Assign students specific roles of preparing fish for	**The trainee should be able to:** • Select tools, equipment and safety gear • Perform washing fish • Perform fish scaling • Perform fish gutting • Cutting fish in a	Fish canning performed as per required set standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to prepare fish for canning **Principles:** The trainee should explain principles involved in: • Shelf life of canned fish **Theories:** The trainee should explain: -	The following tools, equipment and safety gears should be available: - • Cutting table • Knife • Fish comb • Bucket	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			canning	required sizes and shape • Clean and store tools and equipment.		• Economic importance of canning fish • Recommended fish species for canning **Circumstantial knowledge: Detailed knowledge about:** Limitations associated with establishment of fish canning industries.		
		c) Performing can filling	**Brainstorm:** Guide the students to brainstorm on how to perform can filling **Demonstrations**:	**The trainee should be able to:** • Select tools, equipment and safety gear • Perform washing	Fish can fill performed as per required set standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to perform can filling: **Principles:** The trainee	The following tools, equipment and safety gears should be available: -	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			Conduct a demonstration on how to perform can filling **Role-Play:** Assign students specific roles of performing can filling	fish • Clean jars with clean water and dry them • Put fish in jars and seal • Cool sealed jars • Clean and store tools and equipment		should explain principles involved in sterilization of jars **Theories:** The trainee should explain: - • Importance of can filling **Circumstantial knowledge: Detailed knowledge about:** • Carefulness in performing can filling to avoid contamination	• Can sealer • Fish meat separator • Sterilizers • Cutting table • Knife	
		d) Performing jar filling	**Brainstorm:** Guide the students to	**The trainee should be able to:**	Fish canning performed as	**Detailed knowledge of: Method used:** The trainee	The following tools, equipment	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
			brainstorm on the importance of jar filling **Demonstrations:** Conduct a demonstration on how to perform jar filling **Role-Play:** Assign students specific roles of filling fish into jars	• Select tools, equipment and safety gear • Perform washing fish • Clean jars with clean water and dry them • Put fish in jars and seal • Cool sealed jars • Clean and store tools and equipment	per required set standards	should be able to explain how perform jar filling: **Principles:** The trainee should explain principles involved in: • Removing meat from fish • Sterilization of jars • Cooling of filled jars **Theories:** The trainee should explain: - • Materials used for jar filling **Circumstantial**	and safety gears should be available: - • Jar lifter • Canning racks • Weighing scales • Can sealer • Cutting table • Knife	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	No. of Periods per Unit
				Product Assessment	Product/Services Assessment	Knowledge Assessment		
						knowledge: Detailed knowledge about: • Limitations associated with establishment of fish canning industries.		

Form Four

Table 6: *Detailed Contents for Form Four*

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
1.0 Controlling quality of fish and fish products	1.1 Controlling quality of live fish	a) Maintaining water quality	**Brainstorming:** Guide students to brainstorm on factors which can deteriorate quality of water **Demonstration:** Show students how to measure / analyze quality of water. **Role-Play:** Assign students roles such	**The trainee should be able to:** • Select tools, equipment and safety gear • Check water quality control parameters (pH, dissolved oxygen, temperature and concentration of ammonia) • Perform routine	Quality of water maintained as per required standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to maintain quality of water **Principles:** The trainee should explain principles involved performing aeration **Theories:** The trainee should be able to explain:	The following tools, equipment and safety gears should be available: - • Turbidity meter • Secchi discs • Digital water quality meters	15

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			as water quality monitor, fish health inspector, and farm technician to simulate real-life monitoring and decision-making processes in live fish management **Practical:** Lead students to perform hands-on water quality testing in small groups or individually.	exchange of water Perform aeration • Control feeding regime Remove waste and debris • Prepare report • Store tools, equipment and safety gear		• Causatives agents for change of pH in water • Factor to consider in maintaining water quality **Circumstantial knowledge: Detailed knowledge about:** • Costs and labour requirement in exchanging water	• Chemical test kits • Aerators • pH meter	
		b) Maintaining	**Brainstorming:** Guide students to	**The trainee should be able to:**	Fish fed as per the recommended	**Detailed knowledge of: Method used:** The	The following tools, equipment	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
		feeding regime	brainstorm the components of an effective feeding regime, such as feed types, feeding frequency, quantity, and their impact on fish health, growth, and water quality **Demonstration:** Show students how to correctly measure, prepare, and apply feed to different fish species **Practical:**	• Select tools, equipment and safety gear • Arrange feeding rate and ratio • Feed fishes according to the rate • Avoid over feeding which may result to high concentration of ammonia • Perform routine exchange of water • Remove waste and debris	standards	trainee should be able to explain how to maintain feeding regime **Principles:** The trainee should explain principles involved in feeding regime of fish **Theories:** The trainee should be able to explain: • Factors to consider in maintaining feed regime	and safety gears should be available: - • Feed scoops • Feed troughs • Automatic feeders • Feed storage bins • Disinfectant sprayers • Weighing scales • Feeding	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			Lead students to perform actual feeding of fish **Group Discussion:** Organize small discussion groups and lead discussion on various feeding methods, identify common challenges, and recommend solutions **Visiting Site:** Arrange a visit to a nearby fish farm or aquaculture center where students can observe real-life feeding	• Store tools, equipment and safety gear		**Circumstantial knowledge: Detailed knowledge about:** • Fishery rules and regulations	chart	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			practices, interact with farm staff, and compare classroom knowledge with practical applications in the field					
		c) Monitoring performance	**Brainstorming:** Guide students to brainstorm on the importance of monitoring performance **Demonstration:** Show students how to monitor performance of fish	**The trainee should be able to:** • Select tools equipment and safety gears • Check water quality control parameters (pH, dissolved oxygen • Perform regular	Performance of fish properly monitoreds	**Detailed knowledge of: Method used:** The trainee should be able to explain how to monitor fish performance: **Principles:** The trainee should explain principles involved in monitoring fish performance	The following tools, equipment and safety gears should be available: - • DO meter • Ammonia kits • Turbidity	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			Practical: Allow students to perform monitoring of performance **Group Discussion:** Organize small discussion group and lead them to discuss factors of consideration in monitoring performance **Visiting Site:** Arrange a visit to a nearby fish farm or aquaculture	observation on measure growth rate (weight and length) of fish and monitor feed conversion ratio • Maintain fish skin moisture • Control feeding regime		**Theories**: The trainee should be able to explain: • Causatives agents for change of pH in water. • Determine growth rate of fish e.g., Weighing fish **Circumstantial knowledge: Detailed knowledge about**: Fishery rules and regulations	meter • CO_2 meter • Underwater camera • Biosensors • Microscope • Fish tanks	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			center where students can learn about fish performance					
	1.2 Inspecting non-alive fish	a) Performing organoleptic test	**Brainstorming:** Guide students to brainstorm on evaluating quality of fish by using sensory organs in checking appearance, color, texture, odor, and taste **Demonstration**: Show students how to properly perform an organoleptic test step-by-	**The trainee should be able to:** • Organize tools, equipment and safety gears • Collect samples • Observe fish colour • Perform smell test • Feel texture of the fish • Isolate or remove spoiled fish	Quality of non-alive fish maintained as per required standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to perform organoleptic assessment **Principles:** The trainee should explain principles involved in collect fish samples for organoleptic assessment	The following tools, equipment and safety gears should be available: - • Disposable gloves • Thermometer • Cutting board	15

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			step **Practical:** Lead students to perform organoleptic tests themselves on sample fish, guiding them to evaluate and record their observations on sensory qualities **Exercise:** Provide students with different fish samples (fresh, slightly spoiled, spoiled) and ask them to	• Store tools, equipment and safety gear		**Theories:** The trainee should be able to explain: • Importance of controlling quality of fish and fish products • Procedure of inspecting cold and dry cured fish • Performing organoleptic assessment **Circumstantial knowledge: Detailed knowledge about:**	• Sharp knife • Scales • Texture analyzer • Artificial noses	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			conduct organoleptic tests, then classify the fish quality based on their findings and justify their conclusions			• Utilization of spoiled fish and fish products in making animal feed • Knowledge on HACCP		
		b) Taking temperature	**Brainstorming:** Guide students to brainstorm on the importance of measuring temperature in fish inspection and how temperature affects fish freshness and safety **Demonstration:**	**The trainee should be able to:** • Organize tools, equipment and safety gears • Collect samples • Perform organoleptic assessment • Check temperature from the sampled	Quality of non-alive fish maintained as per required standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to take temperature from a batch of preserved fish **Principles:** The trainee should explain principles involved in checking	. The following tools, equipment and safety gears should be available: - • Digital probe thermometer • Infrared thermometer	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			Show students how to properly use a thermometer to take fish temperature **Group Discussion:** Organize students into small groups to discuss challenges in maintaining proper temperature during fish storage and transportation **Practical:** Lead students to practice	fish • Identify range of temperature readings for sampled fish • Compare the range with the recommended storage temperature • Store tools, equipment and safety gear		temperatures of both frozen and dried fish **Theories:** The trainee should be able to explain: • Factors which can cause changes of temperature for preserved fish **Circumstantial knowledge: Detailed knowledge about:** • Utilization of spoiled fish and fish products in	• Data loggers • Calibration • Submersible thermometer	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			taking temperature of fish samples using thermometer			making animal feed • Knowledge on HACCP		
		c) Collecting samples for laboratory investigation	**Brainstorming:** Guide students to brainstorm on types of samples needed (fish flesh, water, ice, packaging) and purpose of collecting samples **Demonstration:** Show students how to collect samples hygienically	**The trainee should be able to**: • Organize tools, equipment and safety gears • Identify sapling site and batch of fish • Record sample details • Take whole fish in case is small or portion for large fish	Fish samples collected as per required laboratory standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to collect fish samples for laboratory investigation **Principles:** The trainee should explain principles involved in storage and transportation of laboratory samples	. The following tools, equipment and safety gears should be available: - • Seine net • Scoop net • Larva light trap • Electro net • Hooks and line	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			Exercise: Give students a scenario where they must plan a sampling procedure, decide what samples to collect, how to collect them, and how to maintain sample integrity. Then have them present their plans **Practical:** Lead students to practice collection of fish or fish	• Place sample in sterile container • Store sample properly • Fill in submission form and send the sample to the laboratory • Store tools, equipment and safety gear		**Theories:** The trainee should be able to explain: • Importance of taking samples for laboratory investigation • Procedure for collecting laboratory samples **Circumstantial knowledge: Detailed knowledge about:** • Carefulness to avoid contamination of samples	• Fish basket • Medical gloves	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			product samples			• Knowledge on HACCP		
	1.3 Controlling quality of fish and fish products	a) Checking methods of preservation	**Brainstorming:** Facilitate a session where students brainstorm different fish preservation methods (e.g., drying, salting, smoking, freezing, canning), discussing their principles and how each method affects fish quality **Demonstration:** Show students how to inspect preserved fish products, focusing on key	**The trainee should be able to:** • Organize tools, equipment and safety gears • Perform organoleptic assessment • Perform raised cover • Check temperature • Determine preservation methods • Collect samples. • Interpret laboratory results	Quality of fish and fish products preserved as per required standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to preserve fish and fish products **Principles:** The trainee should explain principles involved in: • Dry preservation method • Salt preservation method • Cold preservation	The following tools, equipment and safety gears should be available: - • Safety gears (PPE) • Visual inspection tools • Quality index methods	25

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			quality indicators such as color, odor, texture, and condition of packaging **Guided Practical:** Supervise students to examine fish samples preserved using various methods, **Study tur visit:** Organize a field visit to a local fish processing or preservation facility where students can observe real-	• Store tools, equipment and safety gear		method **Theories:** The trainee should be able to explain: • Factors to consider in checking preservation methods **Circumstantial knowledge: Detailed knowledge about:** • Effect of weather in processing and storage of fish and fish products	• Grading band sorting machines • Vacuum packaging machine • Skinning machine • Microbial testing kits • pH meter	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			life preservation techniques and quality control practices in action					
		b) Determining shelf life of different seaweed products	**Brainstorming:** Lead students to brainstorm key factors that affect the shelf life of seaweed products, such as moisture content, storage conditions, microbial activity, and packaging materials **Demonstration:** Demonstrate how to assess shelf-life indicators	**The trainee should be able to:** • Organize tools, equipment and safety gears • Perform organoleptic assessment • Perform raised cover • Check temperature • Determine preservation methods	Shelf life of seaweed products set properly	**Detailed knowledge of: Method used:** The trainee should be able to explain how to determine shelf life of seaweed products: **Principles:** The trainee should explain principles involved in checking moisture content of seaweed products	The following tools, equipment and safety gears should be available: - • Texture analyzer • Colorimeter • Moisture analyzer • pH meter • Incubator	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			such as changes in appearance, texture, odor, and microbial spoilage in seaweed samples **Practical:** Supervise students as they perform shelf-life testing on different seaweed products over a period of time, documenting and interpreting the results **Farm Visit:** Organize a visit to a	• Collect samples. • Interpret laboratory results • Store tools, equipment and safety gear		**Theories:** The trainee should be able to explain: • Importance of determining shelf life for seaweed products • Major causes of seaweed products spoilage • Organoleptic assessment for seaweed products. • Preservation of seaweed products	• Vacuum sealer	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			seaweed farm or processing facility where students can observe harvesting, drying, packaging, and storage practices that influence the shelf life of seaweed products			product **Circumstantial knowledge: Detailed knowledge about:** Effect of weather in processing and storage of seaweed products		
		c) Performing biochemical and chemical evaluation	**Brainstorm:** Lead students to brainstorm the purpose of biochemical and chemical evaluation (e.g., checking pH, TVB-N, histamine levels), and their impact	**The trainee should be able to:** • Organize tools, equipment and safety gears • Collect representative	Biochemical test as per required laboratory standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how perform biochemical test for fish **Principles:** The trainee	The following tools, equipment and safety gears should be available: - • Refrigeratio	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			on fish quality and safety **Demonstration:** Demonstrate how to perform basic biochemical and chemical tests on fish products using lab equipment, reagents, and proper sampling techniques **Practical:** Supervise students as they carry out biochemical tests (e.g., pH test, peroxide	sample of fish or fish products • Extract similar quantity of samples • Pack sample • Fill in laboratory sample submission form • Perform biochemical test • Interpret laboratory results • Store tools, equipment and		should explain principles involved in collecting samples for biochemical test **Theories:** The trainee should be able to explain: • Importance of performing biochemical tests for fish and fish products • Factors which may necessity biochemical test of	n • pH meter • Homogenizer • Drying ovens • Weighing balance • Distillation unit • Vacuum packaging machine • Centrifuge	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			value) on fish samples, guiding them on accurate measurement, observation, and safety procedures **Group Discussion:** Facilitate discussion where students compare test results, interpret quality implications, and link results to product shelf-life and standards **Individual Assignment:**	safety gear		fish and fish products • Methods of controlling harmful chemicals in fish and fish products **Circumstantial knowledge: Detailed knowledge about:** • Knowledge of natural harmful chemicals found in fish.		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			Assign students to write a lab report or summarize one method of chemical evaluation, explaining its relevance to fish safety and quality assurance					
		d) Performing biological evaluation	**Brainstorm:** Guide students to brainstorm the importance of biological evaluation **Demonstration:** Demonstrate how to collect fish samples and conduct biological evaluation	**The trainee should be able to:** • Organize tools, equipment and safety gears • Collect representative samples • Extract samples for	Biological evaluation performed as per required laboratory standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to perform biological evaluation **Principles:** The trainee should explain principles involved in performing	The following tools, equipment and safety gears should be available: - • Fat meter • Sensory evaluation	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			Practical: Lead students to collect biological samples and observe in case their microorganisms by using microscope **Group Discussion:** Facilitate group discussion to students in interpretation of findings	laboratory evaluation • Fill details of samples in a laboratory submission form • Mix samples with reagent • Observe sample by microscope • Interpret laboratory results • Store tools, equipment and safety gear		biological evaluation. **Theories:** The trainee should be able to explain: • Major causes of fish and fish products spoilage **Circumstantial knowledge: Detailed knowledge about:** • Effect of weather in processing and storage of fish and fish products	kits • Torry meter • Texture analyzer • pH meter • Spectrophotometer • Refractrometer • Microscope • DNA barcoding machine	
2.0 Marketi	2.1	a) packing	**Demonstration**s:	**The trainee should be**	Fresh fish	**Detailed knowledge of:**	The following	10

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
ng of fish and fish product	Packaging fish and products	fresh fish	Conduct demonstration on how to pack fresh fish **Practical work:** Lead students to practice packaging of fresh fish **Field visit** Organize study tour visit to enable so as to enable students to observe real fresh fish packaging units	**able to:** • Organize tools, equipment and safety gears • Prepare fresh fish for packaging • Pack fresh fish • Check temperature • Store tools, equipment and safety gear	packaged as per required market standards	**Method used:** The trainee should be able to explain how to park fresh fish **Principles:** The trainee should explain principles involved in packaging of chilled fish **Theories:** The trainee should be able to explain: • Factors to consider in packaging fresh fish	tools, equipment and safety gears should be available: • Vacuum bags • Fiberboard boxes • Tray sealer • Shrink tunnel • Weighi	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
						• Materials used for packaging fresh fish • Limitations on packaging fresh fish **Circumstantial knowledge: Detailed knowledge about:** Factors which may contribute to spoilage of packed fresh fish	ng balance • Insulated boxes • Plastic lines	
		b) Packing dry fish	**Demonstrations:** Conduct demonstration on how pack dry fish **Practical work:**	**The trainee should be able to:** • Organize tools, equipment and safety gears	Dry fish packaged as per required market standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to park dry fish	The following tools, equipment and safety gears should be	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			Organize practical to enable students to practice proper packaging of dry fish **Field visit** Organize study tour visit to enable so as to enable students to observe real dry fish packaging units	• Prepare dry fish for packaging • Pack dry fish • Preserve dried packed fish • Check temperature • Store tools, equipment and safety gear		**Principles:** The trainee should explain principles involved in packaging of dried fish **Theories:** The trainee should be able to explain: • Preservation of dried packed fish **Circumstantial knowledge: Detailed knowledge about:** Factors which may contribute to spoilage of packed dried fish	available: • Vacuum packaging machine • Weighing scales • Heat sealer • Labeling machine	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
		c) Packing frozen fish	**Demonstrations:** Conduct demonstration on how to pack frozen fish **Practical work**: Organize practical and lead students to practice packaging of frozen fish **Field visit** Organize study tour visit to enable so as to enable students to observe real frozen fish packaging units	**The trainee should be able to:** • Organize tools, equipment and safety gears • Prepare frozen fish for packaging • Pack frozen fish • Preserve frozen packed fish • Check temperature • Store tools, equipment and safety gear	Frozen fish packaged as per required market standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to pack frozen fish **Principles:** The trainee should explain principles involved in packaging of frozen fish **Theories:** The trainee should be able to explain: • Factors which may contribute to spoilage of frozen	The following tools, equipment and safety gears should be available: • Aluminum table • Vacuum pack • Machine • Tray sealer • Flow pack machine • Weighing	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
						packed fish **Circumstantial knowledge: Detailed knowledge about:** • Taste of frozen fish which stayed for a long period	machine	
	2.2 Conducting survey for fish markets	a) Identifying customer needs	**Field visit:** Organizes visits to local fish markets, Hotel's restaurants, café where students can interact with stakeholders, observe real operations and gather	**The trainee should be able to:** • Prepare tools for identifying customer needs • Conduct interview • Compile identified	Real customer needs identified	**Detailed knowledge of:** **Method used:** The trainee should be able to explain how to identify customer needs **Principles:** The trainee	The following tools, equipment and safety gears should be available: • Customer	10

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			firsthand information **Interviews:** Trains students on how to prepare questions for interviewing stakeholders 'needs **Group discussion:** Leads a classroom discussion to enable students on sharing their findings	customer • needs • Work on customer's • feedback • Maintain customer • care services		should explain principles involved in marketing of fish and fish products **Theories:** The trainee should be able to explain: • Different types of fish products • Qualities and nutritive value of fish and fish products **Circumstantial**	feedback • Logbook • Digital point of sale • Information resources	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
						knowledge: Detailed knowledge about: Use of consumer preferences to create new products		
		b) Maintaining customer care services	**Field visit:** Organizes visits to local fish markets, where students can interact with stakeholders, observe real operations and gather firsthand information **Group discussion:** Leads a classroom discussion to enable	**The trainee should be able to:** • Create clear customer care policies and make it clear to all staff • Respond promptly to issues raised by customers • Actively listen	Customer services offered according to the recommended standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to maintain customer services **Principles:** The trainee should explain principles involved in handling customers	This unit can be achieved at a work place or in a training institution. The following tools, equipment and safety	

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			students sharing their findings	to customers concerns • Maintain positive attitude to customers • Offer consistent services throughout and to all customers • Identify customer Needs • Monitor service performance through		**Theories:** The trainee should be able to explain: • Procedure of receiving feedback from clients • Recording and attending issues raised by customers **Circumstantial knowledge: Detailed knowledge about:** Use of consumer preferences to create new products	gears should be available: • Help desk Customer feedback Live chart and messaging Decision tree flow	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
				customers' feedback				
		c) Working on customer feedback	**Field visit:** Organizes visits to local fish markets, Hotel's restaurants, café where students can learn about feedback received from customers **Interviews:** Trains students on how to prepare a simple and clear form on which easily filled by customers. The form	**The trainee should be able to:** • Identify customer needs • Prepare form for receiving customers' feedback • Maintain customer care services • Rectify or take measure on issues raised by customer	Issues raised by customer well attended hence improved customer- services	**Detailed knowledge of:** **Method used:** The trainee should be able to explain how to work on customer's feedback **Principles:** The trainee should explain principles involved in collecting feedback from fish customers **Theories:** The trainee	The following tools, equipment and safety gears should be available: •Feedback collection tool •Analysis management tool •Action management tool	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			shall purposely stick-on service performance. **Group discussion:** Leads a classroom discussion where students share findings, compare perspectives, and reflect on what they learned from various stakeholders			should be able to explain: • Contents of form for receiving customer feedback **Circumstantial knowledge: Detailed knowledge about:** • Use of consumer preferences to create new products		
	2.3	a) Preparin	**Brainstorm:**	**The trainee should be**	Promotion of fish	**Detailed knowledge of:**	.	15

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
	Promote fish and fishery products	g logo of fishery products	Guide class discussion by asking open-ended questions such as "Why is logo of fishery products development important in communities?" then guides learners to generate ideas collaboratively **Demonstrations:** Demonstrates how to create a simple logo of fishery products **Group work facilitation;**	**able to:** • Organize tools, equipment and safety gears • Identify the brand message (type of fish product) • Understand preference of consumers • Design logo style and shape • Decide on the logo imagery • Put all necessary	and fishery products performed as per recommended standards	**Method used:** The trainee should be able to explain how to design and prepare logo **Principles:** The trainee should explain principles involved in promoting fish and fishery products **Theories:** The trainee should be able to explain: • Details required on fish products logo	The following tools, equipment and safety gears should be available: • Digital logo design •Graphic design • Packaging and labelling	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			Form student groups and assigns them to discuss limitations of making logo for fishery products **Role-Play:** Assign individuals roles of designing logo for different meat products	information equipment and safety gear		**Circumstantial knowledge:** **Detailed knowledge about:** Knowledge on existing competitors in fish and fish products		
		b) Advertising fishery products	**Hiring motivation speaker** Organizing for hiring expert and experienced person in business promotion to discuss with	**The trainee should be able to:** • Organize tools, equipment and safety gears • Pack promotional	Promotion of fish and fishery products performed as per recommended standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to advertise fishery products:	The following tools, equipment and safety gears should be available:	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			students on how to advertise fishery products **Interviews:** **Group discussion:** Leads a classroom discussion on how to prepare advertisement and brochures for promoting fishery products	materials • Prepare brochures • Prepare posters • Create logo designs • Conduct advertisement • Store tools, equipment and safety gear		**Principles:** The trainee should explain principles involved in promoting fish and fishery products **Theories:** The trainee should be able to explain: • Importance of designing proper logo • Merits of advertising products Preparation of brochures **Circumstantial knowledge:**	• Designed logo •Vacuum packaging machine • Braded trays • Tables	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
						Detailed knowledge about: Knowledge on existing competitors in fish and fish products		
		c) Preparing fishery products sample for business promotion	**Brainstorming** Organize students in groups and lead them to discuss on the importance of promoting business through fish sample **Practical** Lead students on how to prepare fish samples for promoting fish business	**The trainee should be able to**: • Organize tools, equipment and safety gears • Pack promotional materials • Prepare brochures • Prepare posters • Create logo designs	Preparation of fish and fishery products performed as per recommended standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to prepare samples for business promotion: **Principles:** The trainee should explain principles involved in promoting	The following tools, equipment and safety gears should be available: • Scoop • Pipettes • Weighing balance	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
				• Conduct advertisement • Store tools, equipment and safety gear		fish and fishery products **Theories:** The trainee should be able to explain: • Importance of business promotion • Merits of advertising products **Circumstantial knowledge:** **Detailed knowledge about:** • Knowledge on existing competitors	• Spoon • Spatulas • Cleaning materials	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
						in fish and fish products		
3.0 Performing fish breeding	3.1 Designing hatchery facility	a) Designing hatchery unit	**Brainstorming:** Guide students to brainstorm on the important factors of considerations when designing a hatchery unit **Demonstration:** Show students a visual or physical layout of hatchery systems **Role-Play:**	**The trainee should be able to:** • Organize tools and equipment • Identify hatchery capacity • Identify materials required for fabrication of hatchery systems • Sketch a simple drawing of hatchery unit	Fish hatchery designed as per the recommended fisheries standards.	**Detailed knowledge of:** **Method used:** The trainee should be able to explain how to design a hatchery unit **Principles:** The trainee should explain principles involved in designing and fabricating of hatchery facility **Theories:** The trainee	The following tools, equipment and safety gears should be available: - • Water pump • Water filter • Sand filter • Biological filter • Storage tanks	30

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			Assign students roles of hatchery manager, engineer, or financial planner to explore the cost implications and decision-making process involved in hatchery construction **Project-Based Learning:** Organize students into groups to design their own hatchery unit plans. Each group develops layout diagrams, equipment lists, and budget estimates, then	• Store tools, equipment and safety gear.		should be able to explain: • Different hatchery designs **Circumstantial knowledge: Detailed knowledge about:** Cost implication on hatchery construction	• UV sterilizers • Aerators • pH meter • Water quality testing kits • Refractrometer • Weighing scale • Microscope	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			presents their proposal					
		b) Designing and fabricating hapas	**Brainstorming:** Guide students to brainstorm on how to design and fabricate suitable hapas **Demonstration:** Conduct a step-by-step demonstration on how to design and fabricate hapas **Practical:** Engage students in hands-on by selecting suitable	**The trainee should be able to:** • Organize tools and equipment • Identify hatchery capacity • Identify materials required for fabrication of hapas Fabricate hapas • Store tools, equipment and safety gear	Fish hatchery designed as per recommended fisheries standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to design and fabricate hapas **Principles:** The trainee should explain principles involved in fabricating hapas **Theories:** The trainee should be able to explain:	This unit can be achieved at a work place or in a training institution. The following tools, equipment and safety gears should be available: - • Netting materials • PVC pipes	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			material and construction of hapas			• Materials for construction of hapas **Circumstantial knowledge: Detailed knowledge about:** Cost implication on hatchery construction	• Bamboo poles • Galvanized iron • Plastic bouy • Scissors • Knives • Tape measure • Hammer • Netting needle	
		c) Designing and	**Brainstorming:** Guide students to	**The trainee should be able to:**	Fingerling tanks designed and	**Detailed knowledge of: Method used:** The	The following tools, equipment	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
		installing fingerlings tanks	brainstorm the purpose and benefits of nursery tanks in fingerling rearing **Demonstration:** Show students various designs of nursery tanks **Practical:** Lead students to participate in designing and installation of a small-scale fingerling tank. **Field Visit:**	• Organize tools and equipment • Determine hatchery capacity • Identify suitable tank for fingerlings • Improvise accessories for aeration and water circulation • Store tools, equipment and safety gear	installed as per recommended fisheries' standards.	trainee should be able to explain how to design and install fingerling tanks **Principles:** The trainee should explain principles involved in installation of aeration and water circulation accessories **Theories:** The trainee should be able to explain: • Factors to consider in	and safety gears should be available: - • Water tanks • Water filters • Lighting • Substrate • Thermometer • Fish net • Tape measures • Water testing kits	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			Organize a visit to a functioning fingerling tank			designing and installation of fingerling tanks **Circumstantial knowledge: Detailed knowledge about:** Cost implication on using fingerlings tanks		
		d) Designing and constructing nursery ponds	**Brainstorming:** Guide students to brainstorm on the importance of nursery ponds for rearing fingerlings	**The trainee should be able to:** • Organize tools and equipment • Identify hatchery capacity	Fish nursery pond designed and constructed as per recommended fisheries'	**Detailed knowledge of: Method used:** The trainee should be able to explain how to design and construct nursery pond	The following tools, equipment and safety gears should be available: - • Water filters	

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			Demonstration: Demonstrate to students on how to design and construction of a nursery pond **Practical:** Engage students in drawing, modeling, or simulating the design of different types of nursery ponds **Group Discussion:** Facilitate discussions to	• Sketch layout of nursery pond • Check soil type • Assess availability of water • Construct nursery pond • Make water inlet and outlet of nursery pond • Store tools, equipment and safety gear	standards.	**Principles:** The trainee should explain principles involved in making water inlet and outlet for nursery pond **Theories:** The trainee should be able to explain: • Advantages of nursery pond **Circumstantial knowledge: Detailed knowledge about:**	• PVC pipes • Hoe • Thermometer • Fish net • Tape measures • Water testing kits	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			enable students compare the strengths and weaknesses of different pond designs **Field visit:** Organize to visit site where students can observe actual nursery ponds, interact with professionals, and link theoretical knowledge with real-life applications			• Cost implication on hatchery construction		
	3.2 Producing	a) Identifying	**Brainstorming:** Guide students to	**The trainee should be able to:**	Breeding species of fish properly	**Detailed knowledge of: Method used:** The	This unit can be achieved at a	35

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	fingerlings	species for breeding	brainstorm on different fish species commonly bred in hatcheries (e.g., catfish, tilapia, prawns **Role-Play:** Assign students roles such as hatchery technician, species selector, or breeding supervisor to simulate tasks in managing and selecting species for breeding **Group Discussion:**	• Organize tools equipment and safety gears • Identify common species of fish • Identify type of water (cold or salt) • Identify type and availability of feed ingredients • Prepare breeding area • Store tools, equipment and safety gear	identified	trainee should be able to explain how to identify species of fish for breeding **Principles:** The trainee should explain principles involved in breeding fish **Theories:** The trainee should be able to explain: • Spawning circle of different fish species • Factors affecting fish breeding	work place or in a training institution. The following tools, equipment and safety gears should be available: - • Observation tanks • Sorting board • Scoop net • Weighing	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			Facilitate group discussions to enable students sharing experience on benefits and challenges of breeding common species of fish			**Circumstantial knowledge:** Detailed knowledge about: Cost benefit analysis of breeding fish business	scale • Buckets	
		b) Selecting brood fish	**Brainstorming:** Guide students to brainstorm the key factors to consider when selecting brood fish, such as age, size, health status, genetic quality, and species suitability (e.g., catfish,	**The trainee should be able to:** • Organize tools equipment and safety gears • Identify healthy and disease-free fish.	Breeding of fish Efficiently performed	**Detailed knowledge of: Method used:** The trainee should be able to explain how to select brood fish **Principles:** The trainee should explain principles involved in selection of	This unit can be achieved at a work place or in a training institution. The following tools, equipment and safety gears	

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			tilapia, prawns) **Demonstration:** Show students how to identify and select healthy brood fish from different species **Practical:** Involve students in hands-on activities by leading to perform physically examination of fish to assess features suitable for brood stock	□ Choose fish from fast-growing and high-yielding stocks. □ Select mature males and females (sexually mature). □ Ensure good body shape and absence of deformities. • Choose fish with active behavior • Select females with soft,		breeding fish **Theories:** The trainee should be able to explain: - • Spawning circle of different fish species • Factors to consider in selection of both male and female brood fish • Importance of breeding fish • Brood stock mating **Circumstantial**	should be available: - • Observation tanks • Sorting board • Scoop net • Weighing scale • Buckets	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			Group Discussion: Facilitate group discussions where students analyze case scenarios of brood fish selection, discuss potential breeding outcomes, and recommend best practices for brood stock management	swollen bellie • Maintain a proper male-to-female ratio • Store tools, equipment and safety gear		**knowledge: Detailed knowledge about:** Cost benefit analysis of breeding fish business		
		c) Facilitating mating	**Brainstorming:** Guide students to brainstorm on different mating and spawning methods based on fish	**The trainee should be able to:** • Organize tools equipment and safety gears	Breeding of fish is efficiently performed	**Detailed knowledge of: Method used:** The trainee should be able to explain how to facilitate mating of fish	The following tools, equipment and safety gears should be available: -	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			species **Demonstration:** Show students how to prepare and set up mating facilities for brood fish **Practical:** Lead students to participate in setting up mating environments **Group Discussion:** Facilitate group discussions to enable students compare mating	• Prepare breeding area • Select health fish brooders • Check signs of sexual maturity • Maintain ideal water parameters • Provide proper lighting and shelter • Inject hormones to species which does not spawn early		**Principles:** The trainee should explain principles involved in performing artificial insemination **Theories:** The trainee should be able to explain: - • Spawning circle of different fish species • Factors affecting fish breeding • Importance of breeding fish	• Spawning mops • Aerators • Breeding traps • Weighing scale • Breeding nets • Water pump • Water filter • Water testing kits • Hormones • LED light	

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			methods for different species, identify common challenges, and suggest improvements for effective brood stock mating	• Allow natural spawning and artificial breeding • Monitor health of brooders • Conduct Tilapia, Catfish and Prawns breeding • Store tools, equipment and safety gear		• Check activeness of brood stock **Circumstantial knowledge: Detailed knowledge about:** Cost benefit analysis of breeding fish business		
		d) Incubating fertilized	**Brainstorming:** Guide students to brainstorm on the process	**The trainee should be able to:** • Organize tools	Incubation of fertilized eggs performed as per	**Detailed knowledge of: Method used:** The trainee should be able to	The following tools, equipment and safety	

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		eggs in hatchery unit	of incubating fertilized fish eggs and factors that influence hatching **Demonstration:** Show students how to set up and manage incubation units in a hatchery, including water quality monitoring and egg handling techniques **Practical**: Let students practice preparing incubation tanks	equipment and safety gears • Select a clean hatching/incubation system, • Maintain optimal water temperature suitable for the species • Ensure continuous water flow to provide oxygen and remove	Recommended standards	explain how to incubate fertilized eggs **Principles:** The trainee should explain principles involved in breeding fish **Theories:** The trainee should be able to explain: • Spawning circle of different fish species • Factors to consider in incubating fertilized eggs • Procedure of	gears should be available: - • Jar incubator • Hatching jars • Incubator trays • Aerators • Weighing scale • Water pump • Water filter • Water testing kits • Thermomete	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			or trays, caring for fertilized eggs, and observing their development under guidance **Group discussion:** Facilitate discussions to enable students sharing observations from their practical work, compare incubation methods, and suggest ways to overcome challenges	waste • Check and adjust water parameters • Agitate eggs gently to prevent crumping and settling • Monitor eggs daily for fungus or dead eggs and remove them promptly • Prepare hatching area		incubating fertilized eggs in hatchery unit **Circumstantial knowledge: Detailed knowledge about:** Cost benefit analysis of breeding fish business	r	

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			Farm Visit: Organize a study tour visit to a local fish hatchery or aquaculture farm where students can observe actual incubation facilities, interact with hatchery staff, and relate their classroom learning to real-world practices	• Transfer hatched larvae gently to rearing tanks • Store tools, equipment and safety gear				
		e) Handling fingerlings in nursery ponds/un	**Brainstorming:** Guide students to brainstorm best practices for handling fingerlings in nursery ponds	**The trainee should be able to:** • Organize tools equipment and safety gears	Handling of fingerlings performed as per Recommended standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to handle fingerlings in a nursery	The following tools, equipment and safety gears should be available: -	

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		its	**Demonstration:** Demonstrate safe and proper handling techniques of fingerlings (e.g. netting, transferring, and acclimatization procedures) in nursery ponds or tanks **Practical:** Provide hands-on experience where students practice handling fingerlings in real or	• Determine stocking density • Stock fingerlings in cool hours • Provide nutritionally balanced feed • Adhere to recommended feeding regime • Monitor water quality parameters • Monitor health of fingerlings • Harvest and transfer		pond **Principles:** The trainee should explain principles involved in monitoring health of fingerlings **Theories:** The trainee should be able to explain: • Importance of applying fertilizer and lime in a nursery pond • Determining fingerlings stocking	• Scoop net • Hapa nets • Plastic bags • Aerators • Weighing scale • Water filter • Water testing kits • Thermometer • Fish grader • Buckets	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			simulated nursery settings, focusing on gentle and efficient methods **Group Discussion:** Facilitate discussions on common challenges in fingerling handling, such as overcrowding or water quality issues, and strategies to overcome them **Case Study Analysis:** Present students with case	fingerlings after reaching the intended size • Store tools, equipment and safety gear		capacity **Circumstantial knowledge: Detailed knowledge about:** Cost benefit analysis of breeding fingerlings business		

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			studies of fingerling handling successes and failures. Have them analyze what worked, what went wrong, and recommend best handling practices based on the examples					
		f) Performing sex reversal	**Brainstorming:** Guide students to brainstorm the concept of sex reversal, why it is practiced in fish species like tilapia, and its benefits for fish farming	**The trainee should be able to:** • Organize tools equipment and safety gears • Select appropriate	Sex reversal performed as per Recommended standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to perform sex reversal: **Principles:** The trainee	The following tools, equipment and safety gears should be available: - • Hormone • Water tanks	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			productivity **Demonstration:** Conduct a demonstration showing the procedures involved in sex reversal, such as hormone administration techniques, timing, and handling **Practical:** Allow students to observe or simulate the sex reversal process under supervision, including	species: • Prepare hormone-treated feed • Collect newly hatched fry for treatment • Acclimatize fry to nursery conditions. • Feed fry with hormone-treated feed 3–5 times daily • Continue		should explain principles involved in administering hormone to fish **Theories:** The trainee should be able to explain: • Factors to consider during performing sex reversal • Merits and demerits of performing sex reversal **Circumstantial knowledge: Detailed**	• Hapa net • Floating feeding rings • Hatching trays • Scoop net • Weighing scale • Drying equipment • Bucket • Water pump • Water testing kits • Thermomete	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			hormone treatment application and post-treatment care **Group Discussion:** Facilitate a group discussion on the importance, ethical considerations, and challenges of sex reversal in aquaculture, encouraging students to share ideas and ask questions	treatment for 21–28 days, depending on species and environmental fact • Maintain optimal pond conditions • Monitor feed consumption and fry health • Transfer fry to grow-out tanks or ponds.		**knowledge about:** • Cost benefit analysis of performing sex reversal	r • Aerator	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
				• Store tools, equipment and safety gear				
		g) Performing catfish artificial insemination	**Brainstorming:** Guide students to brainstorm the process and benefits of artificial insemination in catfish and other species **Demonstration:** Conduct a live or video demonstration showing the steps of catfish artificial insemination	**The trainee should be able to:** • Organize tools equipment and safety gears • Inducing Spawning • Gently strip eggs by pressing the abdomen toward the genital opening. • Collect the eggs in a clean, dry bowl	Artificial insemination performed as per required standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to perform artificial insemination **Principles:** The trainee should explain principles involved in collecting fish gametes **Theories:** The trainee	The following tools, equipment and safety gears should be available: - • Stainless steel • Scissors • Tweezers • Non-spermicidal lubricant	

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			Practical: Provide and supervise hands-on practice or simulations of artificial insemination techniques **Group Discussion:** Facilitate discussions on the challenges, benefits, and ethical aspects of artificial insemination **Visiting:** Organize a study tour visit	• Collect female eggs by pressing the abdomen toward the genital opening • Collect the eggs in a clean, dry bowl • Collect male sperms (milt) strip milt gently into a separate dry container • Perform fertilization by mixing milt and eggs • Add small volume of		should be able to explain: • Procedure of collecting fish gametes **Circumstantial knowledge: Detailed knowledge about:** • Limitations of performing artificial insemination	• Thermometer • Hormone • Weighing scale • Milt collection • Knife • Soft spoon • Incubator • Water filter	

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			to a fish hatchery or aquaculture center where students can observe actual artificial insemination procedures	water and stir gently • Rinse the fertilized eggs gently with clean water to remove excess milt and debris • Transfer the eggs to an incubation system				
	3.3 Preparing fingerlings for stocking	a) Performing fingerling harvestin	**Brainstorm:** Guide the students to brainstorm on harvesting fingerling for stocking	**The trainee should be able to:** • Organize tools equipment and safety gears	Fish fingerlings harvested as per recommended standards before stocking	**Detailed knowledge of: Method used:** The trainee should explain how to harvest fingerlings	The following tools, equipment and safety gears should be available	

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		g	**Demonstrations:** Conduct a demonstration showing how to harvest fish fingerlings for stocking **Practical work:** Lead students to participate in hands-on harvesting of fingerlings from tanks or ponds	• Lower the water level in the pond • Clean harvesting equipment • Seine or trap fingerlings • Drug the seine gently from one side to another • Perform fingerlings counting • Pack and transport fish		**Principles:** The trainee should explain principles involved in packing and transporting harvested fingerlings **Theories:** The trainee should be able to explain: • Importance of proper handling of fish fingerling prior to stocking • Preparation of fingerlings prior to	Rulers • Transfer net • Bucket • Disinfectant • Aerator • Transfer tanks • Scoop net • Weighing scale • Water testing kits	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
				fingerlings • Store tools, equipment and safety gear		stocking **Circumstantial knowledge: Detailed knowledge about:** • Consequences of failure to control water quality parameters		
		b) Grading fingerlings	**Brainstorm:** Guide the students to brainstorm the grading process of fingerlings prior stocking	**The trainee should be able to:** • Organize tools equipment and safety gears • Sort fingerlings by	Fish fingerlings grading performed as per recommended standards before stocking	**Detailed knowledge of: Method used:** The trainee should explain how to **grade fingerlings** **Principles:** The trainee	The following tools, and safety gears should be available Rulers • Adjustable	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			Demonstrations: Conduct a demonstration showing the how grading process of fingerlings conducted. **Practical work:** Students perform fingerling grading under the teacher's supervision, practicing gentle handling, sorting by size or species, and documenting the results correctly.	site • Place fingerlings on the grader and allow them to pass through the slot according to their sizes • Give judgement of grades of fingerlings • Perform fingerlings Counting		should explain principles involved in grading fingerlings by size **Theories:** The trainee should be able to explain: • Importance of grading fingerlings • Factors to consider in grading fingerlings **Circumstantial knowledge: Detailed knowledge about:**	bar graders • Floating mesh graders • Fixed bar graders • Grading baskets • Grading tables • Grading nets • Scoop net • Weighing scale • Bucket	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
						• Consequences of failure to control water quality parameters	• Water pump • Grading screen	
		c) Packing fingerlings	**Brainstorm:** Guide the students to brainstorm on the importance of proper packing of fingerlings **Demonstrations:** Conduct a demonstration on how to pack fingerlings in oxygenated plastic bags	**The trainee should be able to:** • Organize tools equipment and safety gears • Select healthy fingerlings • Perform fingerlings sorting and counting • Fill plastic bag with one third clean water	Fish fingerlings packed as per recommended standards before stocking	**Detailed knowledge of: Method used:** The trainee should explain how to pack fingerlings **Principles:** The trainee should explain principles involved in preparing packaging materials for fingerlings	The following tools, and safety gears should be Available rulers: • Polyethylene bags • Cooler boxes • Rubber band • Air pump	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			Practical work: Lead students to practice packing of fingerlings in oxygenated plastic bags port	• Add a calculated number of fingerlings with oxygen • Put the sealed bag with fingerlings into another plastic bag • Arrange the bags upright in insulated boxes • Label boxes with required details • Store tools, equipment and safety gear		**Theories:** The trainee should be able to explain: - • Procedure of packing fingerlings • Recommended materials for packing fingerlings **Circumstantial knowledge: Detailed knowledge about:** • Economical use of rejected fingerlings	• Water pump • Scoop net • Hapa net • Buckets • Weighing scale • Water testing kits • Chilling tanks • Disinfectant	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
		d) Transporting fingerlings	**Brainstorm:** Guide the students to brainstorm on the importance of proper transportation of fingerlings focusing on stress reduction, survival and biosecurity **Practical work:** Lead students to practice transportation of fingerlings by using different means of transport	**The trainee should be able to:** • Organize tools equipment and safety gears • Condition fingerlings starve fingerlings for 12 - 24 hours before transport • Perform fingerlings • Maintain water quality • Ensure reliable supply of oxygen	Fish fingerlings transported as per recommended standards before stocking	**Detailed knowledge of:** **Method used:** The trainee should explain how to transport fish fingerlings **Principles:** The trainee should explain principles involved in conditioning and acclimatizing fingerlings **Theories:** The trainee should be able to explain: • Procedures for	The following tools, and safety gears should be available rulers: • Polyethylene bags • Cooler boxes • Rubber band • Air pump • Scoop net • Hapa net • Buckets • Weighing	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
				• Monitor fingerlings during transportation • Store tools, equipment and safety gear		reducing stress during transportation of fingerlings **Circumstantial knowledge: Detailed knowledge about:** • Consequences of failure to control water quality parameters	scale • Chilling tanks	
		e) Stocking fingerlings	**Brainstorm:** Guide the students to brainstorm on the ideal conditions and procedures for stocking fingerlings	**The trainee should be able to:** • Organize tools equipment and safety gears	Fish fingerlings stocked as per recommended standards before stocking	**Detailed knowledge of: Method used**: The trainee should explain how to stock fingerlings	The following tools, and safety gears should be Available rulers:	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			Demonstrations: Demonstrates on how to perform proper stocking of fingerlings into the culture system **Practical work:** Lead students to perform stocking of fingerlings and post-stocking monitoring procedures	• Clean pond or tank before stocking • Maintain water quality • Apply lime and fertilizer as per fish pond condition • Fill the pond with water • Acclimatize fingerlings • Inspect fingerlings • Stock fingerling early in the morning or late afternoon		**Principles:** The trainee should explain principles involved in inspecting fingerlings before stocking **Theories:** The trainee should be able to explain: • Preparation of fingerlings prior to stocking • Reasons for stocking fingerlings early in the morning late evening	• Scoop net • Fish grader • Plastic bags • Buckets • Thermometer • Secchi disk • Water testing kits • Aerators • Logbook	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
				• Maintain stocking density • Perform monitoring • Store tools, equipment and safety gear		**Circumstantial knowledge: Detailed knowledge about:** Consequences of stocking stressed fingerlings		
	3.4 Preparing farm entrance footbath	a) Constructing farm entrance footbath	**Brainstorm**; Guide the students to brainstorm on the importance farm entrance footbath **Demonstrations:** Demonstrates on how to make farm entrance	**The trainee should be able to:** • Organize tools equipment, materials and safety gears • Identify site for constructing farm entrance footbath	Fish diseases Controlling performed as per recommended fish husbandry practices	**Detailed knowledge of: Method used:** The trainee should be able to explain how to construct entrance footbath **Principles:** The trainee should explain principles involved in controlling	The following tools, equipment and safety gears should be available: - • Cement • Stone • Sand • PVC pipes	20

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			footbath in a fish farm unit **Practical work:** Lead students to perform construction of fish farm entrance footbath	• Perform layout of the entrance footbath at the selected site • Excavate the selected site • Apply concrete on the floor and side walls of the excavated footbath • Perform curing of the footbath • Store tools, equipment and safety gear		fish farm diseases **Theories:** The trainee should be able to explain: • Factors of consideration during construction of farm entrance footbath **Circumstantial knowledge: Detailed knowledge about:** • Fish zoonotic diseases	• Measuring tape • Safety gears (PPE)	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
		b) Controlling diseases	**Brainstorm:** Guide students to brainstorm on common fish diseases and their visible symptoms **Demonstrations:** Demonstrate controlling disease methods in a fish farm **Practical work:** Lead students to carry out basic disease control procedures in a fish farm under	**The trainee should be able to:** • Organize tools equipment and safety gears • Perform daily observation of fish behavior • Prepare farm entrance footbath • Apply disease control measures • Collect sample • Ensure proper aeration and	Fish diseases Controlled as per required fish husbandry practices	**Detailed knowledge of: Method used:** The trainee should explain how to control fish diseases **Principles:** The trainee should explain principles involved in performing quarantine of newly arrival fish **Theories:** The trainee should be able to explain: • Disease causative	The following tools, equipment and safety gears should be available: - • Aerators • Biofilters • Mechanical filters • Water quality kits • UV sterilizer • Protective clothes • Disinfectant	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
				filtration • Perform regular partial water change • Avoid overfeeding • Disinfect hand and equipment • Provide balanced diet which is fee from mould • Store tools, equipment and safety gear		agents of fish • Treatment of diseases • **Circumstantial knowledge: Detailed knowledge about:** Fish zoonotic diseases	• Quarantine tanks • Microscope • Vaccination tool • Bucket • Disinfecting feeds	
		c) Collecting sample	**Brainstorm:** Guide the students to brainstorm on the types of samples which can be	**The trainee should be able to**: • Organize tools and equipment	Samples collected as per required laboratory procedures	**Detailed knowledge of: Method used:** collect samples	The following tools, equipment and safety	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			collected from suspected sick fish **Demonstrations:** Conduct a demonstration showing how to collect sample from fish. **Role-Play:** Assign students specific roles of sample collection from isolated suspected sick fish	• Prepare sampling equipment • Identify sick fish • Catch and handle the fish gently • Record the observed clinical signs • Euthanize the fish if necessary • Collect external samples (skin mucous, gills. Fins) • Collect internal samples • samples properly		**Principles:** The trainee should explain principles involved in collecting internal sample from suspected sick fish **Theories:** The trainee should be able to explain: • Factors to consider in collection of samples from fish • Procedure for sample collection **Circumstantial**	gears should be available: - • Seine net • Cast net • Scoop net • Trawl net • Gill net • Hook and line • Tagging tool	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
				• Prepare laboratory sample submission form • Store and transport samples • Clean and disinfect tools and equipment •Store tools, equipment and safety gear		**knowledge: Detailed knowledge about:** Safety precautions in collecting samples from large species of fish.		
		d) Diagnosing sick fish	**Brainstorm:** Guide the students to brainstorm on how to diagnose sick fish **Demonstrations:** Demonstrate clinical signs	**The trainee should be able to:** • Organize tools equipment and safety gears • Observe behavioral	Fish diseases Diagnosed as per required fish husbandry practices	**Detailed knowledge of: Method used:** The trainee should explain how to diagnose fish diseases:	The following tools, equipment and safety gears should be available: -	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			observed to a suspected sick fish **Practical work:** Lead students to examine and list observed clinical signs of a given sick fish	signs • Inspect physical appearance • Collect sample • assess environmental condition Perform external and internal examination • Run laboratory results interpretation • Administer drugs • Store tools, equipment and safety gear		**Principles:** The trainee should explain principles involved in performing examination of internal part of fish **Theories:** The trainee should be able to explain: • Importance of diagnosing fish diseases **Circumstantial knowledge: Detailed knowledge about:** Fish zoonotic diseases	• Microscope • Dissecting tools • Water testing kits • Medical gloves • Bacteriological kits • Diagnostic test kits	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
		e) Isolating suspected sick fish	**Brainstorm:** Guide the students to brainstorm on how to isolate suspected sick fish from others **Demonstrations:** Conduct a demonstration showing the conditional necessary to isolate suspected sick fish **Practical work:** Leadb students to practice isolating of suspected sick fish	**The trainee should be able to:** • Organize tools equipment and safety gears • perform keen observation of fish colon • Observe activeness in swimming • Observe feed intake • Examine physical appearance • Check water condition	Suspected sick fish isolated and handled as per required fish husbandry practices	**Detailed knowledge of: Method used:** The trainee should be able to explain how to isolate suspected sick fish **Principles:** The trainee should explain principles involved in checking fish behavior **Theories:** The trainee should be able to explain: • Disease causative agents of fish	The following tools, equipment and safety gears should be available: - • Water tanks • Filters • Thermometer • Air pump • Light	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
				• Catch and isolate fish with any of the above listed abnormalities • Collect sample • Diagnose sick fish • Isolate suspected sick fish • Administer drugs		• Treatment of suspected diseased fish **Circumstantial knowledge: Detailed knowledge about:** Cost implication in performing fish mass treatment		
		f) Administering drugs	**Brainstorm:** Lead students to brainstorm different methods of administering drugs to fish (e.g., oral, bath, injection.	**The trainee should be able to:** • Organize tools equipment and safety gears • Identify drug to be	Drug administered as per recommended fish husbandry practices	**Detailed knowledge of: Method used:** The trainee should be able to explain how to administer drugs to fish	The following tools, equipment and safety gears should be available: -	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			Demonstrations: Conduct a demonstration of administering drugs to the isolated suspected sick fish in aquaculture unit **Practical work:** Lead students to practice drug administration to suspected sick fish	used• Identify route of administration • Prepare drug according to route of administration • Calculate dosage • Mix drug with feed dissolve drug in water • Perform topical drug administration • drug to large fish • Store tools, equipment and safety gear		**Principles:** The trainee should explain principles involved in calculating dosage for fish **Theories:** The trainee should be able to explain: • Disease causative agents of fish • Common fish diseases • Symptoms of sick fish. **Circumstantial knowledge: Detailed knowledge about:**	• Quarantine tanks • Medical syringes • Plastic container • Long handled net	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
						Fish zoonotic diseases		
4.0 Managing fishing, aquaculture and processing facilities	4.1 Managing fishing facilities	a) Maintaining fishing gears	**Brainstorm:** Engages students to brainstorm the key components of fishing facilities (e.g., landing sites, cold rooms, boats, gear storage), and discusses their roles in maintaining quality and efficiency. **Demonstrations:** Conduct a demonstration by showing students	**The trainee should be able to:** • Organize tools equipment and safety gears • Manage different types of fishing gears and fishing vessels • Organize repair and maintenance • Organize services of boats and engines • Control theft • Record keeping	Fishing facilities maintained as per required standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to fishing, aquaculture and fish processing facilities **Principles:** The trainee should explain principles involved in maintaining fishing gears and vessels **Theories:** The trainee should be able to explain:	The following tools, equipment and safety gears should be available: • Safety gears (PPE) • Hook file • Needle nose pliers • Line cutters • Replacement hooks	10

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			different ways of maintaining fishing, aquaculture, and processing facilities **Practical work:** Lead students to perform routine inspection and basic maintenance of fishing, aquaculture, and processing facilities	• Store tools, equipment and safety gear		• Uses of different types of fishing gears • Functions of different processing and fishing gears **Circumstantial knowledge: Detailed knowledge about:** Recommended fishing gears and vessels in relation to fishing zones	• Net needle • Fishing twine • Tackle box	
		b) Maintaining	**Brainstorm:** Guide the students to	**The trainee should be able to:**	Fishing vessels maintained as per	**Detailed knowledge of: Method used:** The	The following tools, equipment	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
		fishing vessels	brainstorm on maintain fishing vessels **Demonstrations:** Conduct a demonstration showing the different ways performing maintenance of fishing gear **Role-Play:** Assign students specific roles of maintain fishing vessels	• Organize tools equipment and safety gears • Identify damages in servicing fishing vessels • Organize repair and maintenance • Organize services of boats and engines • Control theft • Record keeping • Store tools, equipment and safety gear	required standards	trainee should be able to explain how to maintain fishing vessels **Principles:** The trainee should explain principles involved in vessels **Theories:** The trainee should be able to explain: • Importance of maintaining fishing vessel **Circumstantial**	and safety gears should be available: • Safety gears (PPE) • Spanners • Cutting tools • Screwdriver • Oil extraction pump • Oil filter wrench • Anchor • Mooring	

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						knowledge: Detailed knowledge about: Recommended fishing gears and vessels in relation to fishing zones	rope	
	4.2 Managing fish farm activities	a) Managing different aquaculture systems	**Brainstorm:** Guide the students to brainstorm on various aquaculture systems (e.g., pond, cage, recirculating systems **Demonstrations:** Conduct a demonstration	**The trainee should be able to:** • Organize tools equipment and safety gears • Manage fish ponds, smart tanks, aquariums and cages in a fish farm. • Handle smart tanks	Aquaculture systems managed as per required standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to different aquaculture systems **Principles:** The trainee should explain principles involved in	The following tools, equipment and safety gears should be available: - • Aerators • Water testing kits • Water filters	15

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			showing how to operate and manage different systems through physical models, videos, or on-site visits, highlighting system setup, water management, and feeding practices. **Practical work:** Assign students to manage small units of different aquaculture systems	• Manage aquariums • Perform cage fishing • Perform aquaponic fishing • Manage water quality • Manage hatchery • Manage ponds • Manage feed and feeding • Manage health of fish • Manage venoms and theft • Manage fish harvest • Record keeping • Store tools, equipment		• Managing quality of water • Fingerling handling and transportation **Theories:** The trainee should be able to explain: • Characteristic of water quality parameters **Circumstantial knowledge: Detailed knowledge about:** Aquaculture farm waste	• Water pump • Secchi disk	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
				and safety gear		management		
		b) Managing fish breeding hatchery	**Brainstorm:** Engages students in a brainstorming session to identify key requirements, steps, and challenges in managing a fish breeding hatchery to encourage critical thinking and idea sharing before practical work **Demonstrations:** Conduct a demonstration	**The trainee should be able to:** • Organize tools equipment and safety gears • Select site with reliable source of water maintain cleanliness fish ponds, smart tanks, aquariums, and cages • Handle smart tanks	Fish breeding hatchery managed as per required standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to manage breeding hatchery **Principles:** The trainee should explain principles involved in cleaning different types of breeding hatcheries **Theories:** The trainee	The following tools, equipment and safety gears should be available: - • Incubation equipment • Water quality management • Weighing scale • Cleaning	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			to shows step-by-step procedures of maintaining breeding hatchery **Practical work:** Lead students to carry out essential repair and maintenance of breeding hatchery	• Manage aquariums • • Perform repair and maintenance of breeding hatchery • Manage water quality • Restrict access to breeding hatchery • Disinfect equipment and personally before entry • Quarantine new or sick fish • Manage fish harvest • Record keeping		should be able to explain: • Factor to consider in managing breeding hatcheries • Suitability of each aquaculture infrastructures • Characteristic of water quality parameters • Effects of polluted water to fish • Cleaning of breeding hatcheries	tools • Grading tools • Hormone kits • Measuring tools • Feeding equipment	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
				• Store tools, equipment and safety gear		**Circumstantial knowledge: Detailed knowledge about:** Aquaculture farm waste management		
		c) Maintaining fish milling facilities	**Brainstorm:** Guide the students to brainstorm on how maintain fish milling facilities **Demonstrations:** Conduct a demonstration showing how to operate and maintaining different	The trainee should be able to: • Organize tools equipment and safety gears • Inspect fish milling facilities • Identify faults of fish farming facilities • Organize repair and	Fishing facilities maintained as per required standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to maintain milling facilities: **Principles:** The trainee should explain principles involved in performing preventive maintenance	. The following tools, equipment and safety gears should be available: • Cleaning and Sanitation tools	

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			fish milling facilities . **Practical work:** Assign students to manage small units or simulations of different aquaculture systems under teacher supervision, gaining practical skills in monitoring, maintenance, and troubleshooting.	Maintenance for the identified faults • Organize routine services of milling facilities • Control theft • Keeping records • Store tools, equipment and safety gear		of milling vessels **Theories:** The trainee should be able to explain: • Operation of different milling facilities • Importance of maintaining **Circumstantial knowledge: Detailed knowledge about:** Recommended milling facilities in relation to the intended product	• Inspection tool • Safety gears (PPE) • HACCP comliance	
	4.3	a) Maintain	**Brainstorm:**	**The trainee should be**	Fish transportation	**Detailed knowledge of:**	The following	10

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	Managing fish processing facilities	ing transport ation facilities	Guide the students to brainstorm on fish and fish products transportation facilities **Demonstrations:** Demonstrate on how to plan schedule for conducting repair and maintenance of transportation facilities **Role-Play:** Assign students specific roles of maintaining fish	**able to:** • Organize tools, equipment and machines • Inspect fish transportation facilities Identify faults • Plan schedule for conducting preventive maintenance for the identified faults • write report • Keep records • Store tools, equipment	facilities maintained as per required standards	**Method used:** The trainee should be able to explain how to maintain fish transportation facilities **Principles:** The trainee should explain principles involved in performing routine services of fish transportation facilities **Theories:** The trainee should be able to explain: • Cleaning procedure	tools, equipment and safety gears should be available: • Air compressors • Air stone • Water quality kits • Thermometer • Water conditioners • Disinfectant	

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			transportation facilities	and safety gear		of fish transportation facilities • Disinfecting fish transportation facilities **Circumstantial knowledge: Detailed knowledge about:** • Rules and regulation related to transportation of fish and fish products		
		b) Maintaining	**Brainstorm:** Guide the students to	**The trainee should be able to:**	Fish cooling systems	**Detailed knowledge of: Method used:** The	The following tools, equipment	

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		cooling systems	brainstorm on how to maintain cooling systems **Demonstrations:** Demonstrate to shows students how to inspect and maintain components of cooling systems (e.g., compressors, condensers, and fans), including cleaning filters and checking coolant levels **Practical work:** Guide, students to perform	• Organize tools, equipment and machines • Defrost cooling systems • Test and regulate cooling temperature • Clean coils • write report • keeping records • Store tools, equipment and safety gear	maintained as per required standards	trainee should be able to explain how to explain how to maintain cooling systems: **Principles:** The trainee should explain principles involved in performing routine servicing fish cooling systems **Theories:** The trainee should be able to explain: • procedure for performing routine maintenance of cooling	and safety gears should be available: • Thermometer • Data loggers • Water treatment kits • Compressors • Expansion valve • Tool box	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			routine maintenance of cooling systems			system **Circumstantial knowledge: Detailed knowledge about:** Occupational health hazards		
		c) Maintaining kiln and accessories	**Demonstrations:** Demonstrates step-by-step procedures for cleaning, inspecting, and repairing kiln components (e.g., trays, chimneys, firebox) to ensure proper functioning	**The trainee should be able to:** • Organize tools, equipment and machines • Inspect kiln • Identify faults • Plan schedule for conducting	Kiln and accessories maintained as per required standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to maintain kiln and its accessories **Principles:** The trainee should explain principles involved in performing	The following tools, equipment and safety gears should be available: • Smoking trays • Fat collection	

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			Practical work: Lead students to perform repair and maintenance of a kiln **Group discussion:** Guide students to create and use a maintenance checklist, then discusses the importance of routine inspection, safety, and efficiency in kiln operation	preventive maintenance activities • Organize materials for repairing write report • Keep record • Store tools, equipment and safety gear		preventive maintenance of a kiln **Theories:** The trainee should be able to explain: • Factors to consider in performing maintenance kiln and accessories **Circumstantial knowledge: Detailed knowledge about:** Occupational health hazards	trays • Metal hook • Ventilation controls • Wire brushes • Stainless steel cleaner • Pressure washer • Heat resistant sealer • Welding equipment	

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		d) Maintaining dried fish storage	**Demonstrations:** Conduct demonstration on how to perform preventive maintenance of storage facility for dried fish **Practical work:** Lead students to practice cleaning, and perform preventive maintenance of storage facility for dried fish **Observation:** Takes students to observe	**The trainee should be able to:** • Organize tools, equipment and machines • Clean storage facility for dried fish Inspect storage for dried fish Identify faults in a storage facility for dried fish • Plan schedule for conducting preventive maintenance	Storage facilities for dried fish maintained as per required standards	**Detailed knowledge of:** **Method used:** The trainee should be able to explain how to maintain storage facilities for dried fish **Principles:** The trainee should explain principles involved in maintaining hygiene in storage facilities for fish **Theories:** The trainee	The following tools, equipment and safety gears should be available: • Safety gears (PPE) • Airtight containers • Ziploc bag • Sacks • Vacuum sealers • Drying racks	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			real dried fish storage units (or uses models) and guides them to assess cleanliness, ventilation, pest control, and storage conditions.	• Conduct preventive maintenance• write report • Keep records • Store tools, equipment and safety gear		should be able to explain: • Essential requirements for dried fish storage facilities **Circumstantial knowledge: Detailed knowledge about:** Occupational health hazards	• Microwave • Weighing scale	
	4.4 Manage fishery business	a) Planning activities for fishery business	**Brainstorm:** Guide the students to brainstorm on processing planning activities for establishment and	**The trainee should be able to:** • Plan activities for fishery business • Prepare fishery	Fishery business efficiently	**Detailed knowledge of: Method used: The** trainee should be able to explain how to plan activities for fishery	The following tools, equipment and safety gears should be	15

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			managing fishery business **Demonstrations:** Conduct a demonstration on planning activities for establishment and managing fishery business **Role-Play:** Organize and Assign students specific roles of planning activities for manage fishery business	business budgets • Execute planned fishery business activities • Improvise catch limits or total allowable catch • Restrict harvested fish • Develop fishing calendar or season • Perform conservation of habitat		business **Principles:** The trainee should explain principles involved in managing fishery business **Theories:** The trainee should be able to explain: • Advantages of fish product promotions • Effects of uncontrolled fishing **Circumstantial**	available: - • Business planning software • Farm management software • Record keeping system • Feeding rate • Water quality monitoring • Aeration	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
						knowledge: **Detailed knowledge about:** Fishing Law and rules/regulations of a certain location	system • Harvesting nets • Cleaning equipment	
		b) Preparing budgets for fishery operations	**Demonstrations:** Conduct a demonstration on how to prepare a fishery budget by outlining common cost items (e.g., fingerlings, feed, labor, equipment) and using a sample budget format to show	**The trainee should be able to:** • Plan activities for fishery business • Prepare fishery business budgets • Execute planned fishery business activities	Fishery operations budget accommodates all essential requirements	**Detailed knowledge of:** **Method used:** The trainee should be able to explain how to prepare fisheries business budget **Principles:** The trainee should explain principles involved in preparation	The following tools, equipment and safety gears should be available: - • Logbooks • Accounting • Calculator • Spreadsheet	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			calculations. **Group discussion:** Organizes group work where students create their own budgets and then compare them in class, allowing discussion on differences, errors, and possible improvements. **Role-Play:** Organize and Assign students specific roles of developing fishing	• Improvise catch limits or total allowable catch • Restrict harvested fish • Develop fishing calendar or season • Perform conservation of habitat		budget for fishery business **Theories:** The trainee should be able to explain: • Importance of planning fishery business budget **Circumstantial knowledge:** **Detailed knowledge about:** Fishing Law and rules/regulations of a	software • Feasibility study report	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			calendar or season for operations			certain location		
		c) Executing planned fishery activities	**Demonstrations:** Conduct a demonstration on how to implement scheduled fishery tasks such as pond preparation, feeding, water quality monitoring, and harvesting **Supervised field practice:** Assign students to carry out specific fish farming	**The trainee should be able to:** • Identify planned fishery activities• Prepare schedule of implementing planned activities• Execute fishery planned activities •Perform conservation of habitat	Fishery planned activities effectively executed as planned	**Detailed knowledge of: Method used:** The trainee should be able to explain how to execute planned fishery activities **Principles:** The trainee should explain principles involved in preparing schedule for planned fishery activities **Theories:** The trainee	The following tools, equipment and safety gears should be available: - • Pond and tank setup • Water pump • PVC pipes • Aerators • Water testing kits • Thermomete	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
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			activities based on a prepared work plan, then supervises and provides guidance to ensure accuracy and effectiveness **Group work:** Students form work teams, develop weekly activity plans, and execute tasks collaboratively, reinforcing time management, teamwork, and accountability			should be able to explain: • Importance of planning fishery business activities • Setting implantation priorities **Circumstantial knowledge:** **Detailed knowledge about:** Fishing Law and rules/regulations of a certain location	r • Secchi disk • Weighing scale • Scoop net • Hapa net • Record book	
		d) Marketin	**Role-Play:**	**The trainee should be**	Marketing of	**Detailed knowledge of:**	This unit can be	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
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		g fish and fish products	Assign students to act as fish sellers and buyers. This will enable them to practice pricing, negotiation, packaging, and customer interaction skills **Field visit:** Leads students to a local fish market or processing center to observe real-life marketing practices, value addition techniques, and customer preferences	**able to:** • Plan activities marketing fish • identify fish markets • Promote markets for fish and fish products • Advertise fish products • Prepare brochures • Maintain customer care services	fish and fish products efficiently promoted	**Method used:** The trainee should be able to explain how to market fish and fish products **Principles:** The trainee should explain principles involved in promoting markets for fish and fish products **Theories:** The trainee should be able to explain: • Factors to consider in marketing for fish and	achieved at a work place or in a training institution. The following tools, equipment and safety gears should be available: - • Ice machines • Cold storage rooms • Storage racks • Stainless	

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			Group discussion: Facilitates a discussion where students brainstorm strategies to market fish (e.g., branding, packaging, pricing), and then guide them to prepare and display sample marketed products			fish products • Preparations of brochures for marketing fish and fish products **Circumstantial knowledge:** **Detailed knowledge about:** Fishing Law and rules/regulations of a certain location	steel tables • Fish smokers • Vacuum packaging machines • Weighing scale • Live fish tanks	
		e) Recording and stocking	**Demonstrations:** Shows students how to record daily fish farm data	**The trainee should be able to:** • Identify types of	Records and stock management efficiently	**Detailed knowledge of:** **Method used:** The trainee should be able to	The following tools, equipment and safety gears	

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		manage ment	(e.g., feed usage, mortality, harvest) using logbooks or digital tools to enable students to practice record-keeping **Exercise:** Gives students sample scenarios with stock data (e.g., fish stock levels, input use) and guides them to practice updating records and calculating stock balances.	required records • Collect and compile relevant records • Use stock records to prepare budget Coding of stock	managed	explain how to records and stock management **Principles:** The trainee should explain principles involved in managing fish records and stock **Theories:** The trainee should be able to explain: • Effects of poor management of records and stock	should be available: - • Weighing scale • Fish counters • Sampling nets • Logbook • Stocking and Sales records • Spreadsheet	

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			Individual assignment: Assigns students to maintain actual or simulated stock records during training sessions, reviewing their accuracy and completeness regularly			**knowledge:** **Detailed knowledge about:** Fishing Law and rules/regulations of a certain location		
	4.5 Preparing appraisal for fishery projects	a) Carrying out analysis on activities involved in fish farming and processing	**Case study:** Presents real or hypothetical fish farming projects and guides students to identify and analyze each stage of production and processing	**The trainee should be able to:** • Conduct analysis of fishery activities • Interpret fish production data • Gather information	Analysis of activities involved in fish farming activities well analyzed	**Detailed knowledge of: Method used:** The trainee should be able to explain how to perform analysis of fish farming activities	The following tools, equipment and safety gears should be available: - • DO meter	30

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			to assess efficiency and performance **Group work:** Assigns students into groups to appraise different fishery activities (e.g., breeding, feeding, harvesting, processing) by analyzing costs, outputs, and challenges **Role-Play:** Assign students specific roles of conducting	from other Stakeholders Compile data Prioritize fish farming activities • Prepare report		**Principles:** The trainee should explain principles involved in prioritizing fish farming activities **Theories:** The trainee should be able to explain: • Importance of prioritizing fish farming activities • Project appraisal format **Circumstantial knowledge: Detailed**	• pH meter • Refractrometer • Ammonia kits • Turbidity meter • Secchi disk • Weighing scale • Sampling nets • Microscope • Underwater camera	

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			analysis of fishery activities and fish processing by assessing step-by-step on how to fill in details of fishery activities, helping them practice structured evaluation			**knowledge about:** • Project assessment and monitoring	• Fish trays	
		f) Interpreting fishery production and processing	**Demonstrations:** Conduct a demonstration to shows students how to measure and interpret key parameters such as growth rate, feed conversion ratio (FCR), and water quality	**The trainee should be able to:** • Conduct analysis of fishery activities • Identify fish production parameters • Identify	Interpretation of fishery and processing parameter well interpreted	**Detailed knowledge of: Method used:** The trainee should be able to explain how to interpret fishery production and process parameters **Principles:** The trainee	The following tools, equipment and safety gears should be available: - • DO meter	

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		parameters	indicators using real or simulated data **Practical exercise:** Gives students sample data sets from fish production and processing units, guiding them to analyze trends, calculate performance metrics, and draw conclusions **Discussion:** Facilitates a discussion to enable students explain the	different sources for gathering production data • Gather information related to production parameters • Gather information from other • Stakeholders Compile collected production		should explain principles involved in analyzing collected fishery and processing data **Theories:** The trainee should be able to explain: - • The importance of information gathering, analyzing and interpretation of fishery data • Use of fishery and processing data in	• pH meter • Refractrometer • Ammonia kits • Turbidity meter • Secchi disk	

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			meaning and importance of various parameters and how they affect fish growth, yield, and product quality	information • Interpret fish production data		preparing project appraisal **Circumstantial knowledge: Detailed knowledge about:** • Project assessment and monitoring		
		d) Gathering information from other related stakehold	**Field visit:** Organizes visits to local fish farms, hatcheries, or fisheries offices where students can interact with stakeholders and observe real operations to gather	**The trainee should be able to:** • Identify key holders to interview on fishery activities • Prepare interview tools	relevant information collected from stakeholders	**Detailed knowledge of: Method used:** The trainee should be able to explain how to gather information from other related stakeholders	This unit can be achieved at a work place or in a training institution. The following tools,	

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		ers	firsthand information **Interviews:** Trains students on how to prepare questions and facilitates interviews with key stakeholders such as extension officers, suppliers, and fish buyers to collect relevant insights **Group discussion:** Leads a classroom discussion where students share findings, compare	• Collect primary data • Collect secondary data • Compile collected data • Interpret fish production data		**Principles:** The trainee should explain principles involved in interviewing different stakeholders **Theories:** The trainee should be able to explain: - • The importance of information gathering, analyzing and interpretation of fishery data • Use of collected data preparing project	equipment and safety gears should be available: - • Questionnaires Interview • Digital data collection tools • Voice recorders • Digital camera • Note book	

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			perspectives, and reflect on what they learned from various stakeholders			appraisal **Circumstantial knowledge: Detailed knowledge about:** • Computer knowledge • Project assessment and monitoring		
		e) Preparing project proposals	**Demonstrations:** Demonstrate a sample fish farming project proposal using a projector or printed copy. Show step-by-step through each section such	**The trainee should be able to:** • Identify the project title • Identify main project • Identify specific	Fishery project appraisal prepared as per existing problem statement	**Detailed knowledge of: Method used:** The trainee should be able to explain how to prepare project proposals **Principles:** The trainee	The following tools, equipment and safety gears should be available: - • Site	

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			as introduction, objectives, methodology, and budget, while explaining its purpose and how to develop it effectively **Group discussion:** Students create their own fish farming project proposal based on a realistic scenario or local context so as to enhance creativity, decision-making, and planning	project objectives • State the existing problem • Identify targeted beneficiaries for the proposed project • Narrate the implementation strategies • Expected benefits • Expected		should explain principles involved in preparation of fishery project proposals **Theories:** The trainee should be able to explain: - • The importance of information gathering, analyzing and interpretation of fishery data • Project appraisal format	surveying tool • Water analysis kit • Market analysis template • Logical framework analysis • Project management software • Risk assessment	

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			skills. **Role-Play:** Organizes a simulation where students present their project proposals as if they are pitching to investors or government officials and teacher acts as a funding panel and gives feedback on clarity, feasibility, and confidence	challenges and proposed solutions • Project monitoring and evaluation • Prepare project proposals		**Circumstantial knowledge: Detailed knowledge about:** • Computer knowledge • Project assessment and monitoring	matrix • Data analysis tools • Graphic design tools	
	4.6 Managing manpower resources	a) Managing staff routine daily	**Brainstorm:** Guide class discussion by asking open-ended questions such as “Why is	**The trainee should be able to:** • Identify fishery activities	Manpower resource managed as per required standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to manage	The following tools, equipment and safety gears should be	10

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		activities	staff routine daily activities development important in rural communities?" then guides learners to generate ideas collaboratively **Demonstrations:** Demonstrates how to create a simple staff routine daily activities development plan or use manpower planning tools (e.g., training needs assessment forms), while students observe and take	• Identify competencies required fishery activities • Coordinate fishery activities • Manage staff welfare • Maintain staff roster/attendance • Develop manpower resource		manpower resources **Principles:** The trainee should explain rinciples involved in manage staff routine daily activities **Theories:** The trainee should be able to explain: - • Importance of coordinating fishery activities. • Importance of training need assessment • Procedures of staff	available: - • Attendance book • Fingerprint scanner • Staff work schedule	

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			notes **Group work facilitation;** Forms student groups and assigns them a task, such as identifying challenges in manpower daily activities development in their community. The teacher moves between groups, guiding and supporting progress			recruitment • Methods of training staffs **Circumstantial knowledge: Detailed knowledge** about human psychology		

Module Title (Main Competence)	Unit Title (Specific Competences)	Elements (Learning Activities)	Suggested Teaching and Learning Methods	Assessment Criteria			Teaching and Learning (Training) Requirements/ Suggested Resources	Number of Periods per Unit
				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			Role-Play: Assign roles (e.g Manager and employee daily activities) and teacher observes the role-play and provides feedback on communication, leadership, and decision-making					
		b) Managing staff welfare	**Brainstorm:** Guide class discussion by asking open-ended questions such as "Why is staff welfare development plan important in	**The trainee should be able to:** • Identify staff skills gaps • Identify SOPs' for fishery activities	Manpower resource managed as per required standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to manage staff welfare	The following tools, equipment and safety gears should be available: - • Healthy	

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			communities?" then guides learners to generate ideas collaboratively **Demonstrations:** Demonstrates how to create a simple staff routine daily activities development plan or use manpower planning tools (e.g., training needs assessment forms), while students observe and take notes	• Adhere to labour laws • Manage staff welfare • Maintain staff roster/attendance • Develop manpower resource		**Principles:** The trainee should explain principles involved in allocate staff duties **Theories**: The trainee should be able to explain: - • Importance of coordinating fishery activities. • Importance of training need assessment • Procedures of staff recruitment	snacks • Wellness stipends • Ergonomic furniture • Safety equipment	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			Group work facilitation; Forms student groups and assigns them a task, such as identifying challenges in staff welfare activities development in their community. The teacher moves between groups, guiding and supporting progress **Role-Play:** Assign roles (e.g., HR Manager, Employee, Trainer, students' daily			• Methods of training staffs **Circumstantial knowledge: Detailed knowledge** about human psychology		

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			activities) and gives a scenario. The teacher observes the role-play and provides feedback on communication, leadership, and decision-making					
		c) Developing manpower resource	**Brainstorm:** Guide class discussion by asking open-ended questions about manpower resource **Demonstrations:** Demonstrates how to	The trainee should be able to: • Identify skill gaps • Conduct training need assessment • Maintain staff roster/attendanc	Manpower resource managed as per required standards	**Detailed knowledge of: Method used:** The trainee should be able to explain how to develop manpower resource **Principles:** The trainee should explain	. The following tools, equipment and safety gears should be available: - • Training schedule	

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			create a simple manpower development plan or use manpower planning tools **Group work facilitation;** Form student groups and assigns them a task, such as identifying challenges in manpower development in their community **Role-Play:** Assign roles (e.g., HR Manager, Employee, Trainer) and gives a	e • Develop manpower resource		principles involved in identifying skill gaps **Theories:** The trainee should be able to explain: - • Importance of coordinating fishery activities. • Importance of training need assessment • Procedures of staff recruitment • Methods of training staffs	• Capacity building	

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				Process Assessment	Product /Services Assessment	Knowledge Assessment		
			scenario. The teacher observes the role-play and provides feedback on communication, leadership, and decision-making			**Circumstantial knowledge: Detailed knowledge** about human psychology		

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