THE NATIONAL COUNCIL FOR TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING

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OCCUPATIONAL STANDARDS

OCCUPATION: AQUACULTURE TECHNICIAN

LEVEL: NTA LEVEL 4

TABLE OF CONTENTS

ABBREVIATIONS

AF	Aquaculture Facilities
CBET	Competency Based Education and Training
FL	Fishery Policies
FR	Fishery Resources
NACTVET	National Council for Technical and Vocational Education and Training
NOS	National Occupational Standards
OS	Occupational Standards
PCR	Polymerase Chain Reaction
TET	Technical Education and Training
TVET	Technical and Vocational Education and Training

GLOSSARY OF TERMS

Circumstantial Knowledge:	Detailed knowledge, which allows the decision-making in regard to 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.
Competency:	A description of the ability one possesses when able to perform a given occupational task effectively and efficiently.
Competency-based Education:	An instructional programme that derives its content from validated tasks and bases assessment on the learner's performance.
Curriculum:	A description or composite of statements about "what is to be learned" by the trainee/student in a particular instructional programme; a product that states the "intended learning outcomes".
Educational/Training Programme:	The complete curriculum and instruction (what and how) that is designed to prepare a person for employment in a job or other particular performance situation.
Occupation:	A specific position requiring the performance of specific tasks – essentially the same tasks are performed by all employees having the same title. (Example: baker)
Occupational Area:	This is a broad grouping of related jobs. (Example: food service)
Occupational Competence:	The application of knowledge and skills that consistently meet the standards required by the work context.
Occupational Standards:	Specific requirements of competences people are expected to demonstrate in a particular occupational area, including knowledge and relevant attitudes. They also act as a performance tool of assessment of the prescribed outcomes.
Occupational/Job Analysis:	A process used to identify the tasks that are important to employees in any given occupation**.**
Performance Criteria:	Indicate expected end results or outcomes in the form of evaluative statements.
Skills:	The ability to perform occupational tasks with a high degree of proficiency within a given occupation. Skill is conceived of as a composite of three completely interdependent components: cognitive, affective, and psychomotor.

Standards:	A set of statements, which if proved true under working conditions, means that an individual is meeting an expected level and type of performance.
Task Analysis:	The process of analysing each task to determine the steps, circumstantial knowledge, attitudes, performance standards, tools and materials needed, as well as safety concerns required for the employees performing it.
Task:	A work activity that has a definite beginning and ending, is observable or measurable, and consists of two or more definite steps that leads to a product, service, or decision.
Underpinning Knowledge:	Crucial knowledge that an individual must acquire in order to demonstrate competences that are associated in performing a given task.
Verification Process:	The process of having experts review and confirm the importance of the task (competency) statements identified through occupational analysis. Other questions, such as the degree of task learning difficulty are also frequently asked. This process is also sometimes referred to as validation.

1.0. INTRODUCTION

Technical Education and Training (TET) is one of the most important education sub-sectors in Tanzania, responsible for developing a skilled workforce to support the country's industrialization economic agenda. Tanzania's *Development Vision 2025* intends to raise the country's economy to a middle-income status, with a high level of human development. This requires a skilled workforce that is aligned with the needs of the public and private sectors of the economy. The National Council for Technical and Vocational Education and Training (NACTVET) has begun the job of drafting Occupational Standards (OS) that will eventually be adopted as National Occupational Standards (NOS) for use in the delivery of TET that meets the needs of the labour market and the country's economic agenda.

Occupational Standards (OS) are performance criteria that are matched with labour market demands. Each of them describes the functions, performance standards, and understanding or knowledge underpinning a given occupation. They combine skills, knowledge, and attitudes to describe best practice. They are useful tools for establishing job roles, personnel recruitment, supervision, and appraisal, as well as TET Standards. They are also helpful for benchmarking and harmonizing job qualifications on a national and international level. Standards, in general, provide a solid framework for high-quality TET that is labour market-relevant, current, and consistent in application across all public and private institutions.

However, it must be noted that Occupational Standards are different from Training /Education Standards. Occupational standards are defined in terms of activities performed by a person in a selected occupation (e.g., an electrical engineer designs electrical circuits, performs troubleshooting in electrical circuits, etc.), and are usually defined by Employers following procedures as agreed upon by all the stakeholders. On the other hand, Training and Education Standards are developed from the activities defined in the occupational standards, and they specify learning objectives to ensure that the necessary skills and knowledge are developed by a person to enable him/her to function at an agreed level in an occupation. Training and Education Standards are used to define curricula in training institutions. It is critical, however, to establish a direct link between the occupational standards and the training standards for both of them to respond collaboratively to the demands of the labour market.

For the purpose of TET delivery, Tanzania has adopted the Competence Based Education and Training (CBET) approach. The CBET approach focuses on providing learners with the skills and knowledge required to meet the occupational standards. Occupational standards are thus the starting point for developing competency-based training (CBET) programmes. Therefore, it is quite pertinent

for TET institutions to use the relevant occupational standards as a benchmark for formulating their curricula.

Occupational Standards are developed based on a given occupation's current and future demands. As a result, they serve as a means of bridging the gap between the worlds of employment and technical education and training.

The document explains how the occupational standards were developed, as well as the scope, the occupational profile in the form of DACUM charts, and the Occupational Standards.

2.0. OCCUPATIONAL STANDARD DEVELOPMENT PROCESS

The process of developing these Occupational Standards involved both local and international expertise. The process began with an examination of major documents that guide Tanzanian skills development including the *10-year National Skills Development Strategy (2016-2026)*. NACTVET labour market reports were also used in the literature review to determine the skills demand in the Tanzanian labour market as a whole.

After the literature review, a team of experts in consultation with practitioners developed draft occupational standards. The draft document was used to develop an occupational profile for each occupation (DACUM Chart), which is attached as an **Appendix** to every Occupational Standard.

The occupational standards were validated during the stakeholders' forum held on 22nd and 23rd February 2024 at Morogoro. The information from the stakeholders' forum provides insight from the workplace, professional bodies, regulatory bodies and sector ministries regarding trends and changes in the profession, including how well graduates are prepared for working in the occupation.

3.0. THE SCOPE AND OVERVIEW OF THE OCCUPATION STANDARDS FOR AQUACULTURE TECHNICIANS

The standards cover a broad range of duties and tasks that can be performed by an Aquaculture Technician. However, the occupational standards are not meant to replace individual job descriptions. Instead, they are to be used for guidance in defining skill levels and knowledge for the technician in specific settings or positions. The Aquaculture Technician may perform tasks in a number of key areas of the occupational standards, but not necessarily in all areas. For example, in large operations, other individuals may be employed or designated to perform specific tasks.

The Aquaculture Technicians shall culture fish, shrimps, shellfish and other aquatic animals from larvae to adults under the supervision of engineers. Technicians complete a variety of aquaculture operations in the aquafarm, from simple larva stocking to water quality detection, feedstuff feeding and disease prevention and control. Generally, the Aquaculture Technician performs the following responsibilities:

a) Aquaculture pond preparation

b) Enemy organism removal from the aquafarm

c) Cultivation of water quality

d) Fingerling preparation

e) Fingerling transportation

f) Fingerling allocation and stocking

g) Preparation and stocking before adult aquaculture

h) Basic operation of the aquaculture process

i) Aquaculture process management

j) Fishing

k) Live transportation

The Occupational Standards have been clustered into NTA qualification levels i.e. NTA 4 and 5.

4.0. VALIDITY PERIOD

Due to the rapid development of technology, the validity period of occupational standards is 3-5 years. The review will proceed in the same manner as the one before it, with new occupational standards being developed based on current trends of the labour market.

5.0. OCCUPATIONAL STANDARDS

5.1 OCCUPATIONAL STANDARDS FOR AQUACULTURE TECHNICIAN FOR NTA Level 4

OCCUPATION	AQUACULTURE TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	CARRY OUT ENEMY ORGANISM REMOVAL FROM THE AQUAFARM	**DUTY NO.**	401
TASK TITLE	PERFORM POND CLEANING WITH QUICKLIME	**TASK NO.**	4011
PERFORMANCE CRITERIA	The person performing this task must be able to clean the ponds with quicklime in accordance with the standards, regulations and technical requirements for aquaculture industry.		
RANGE STATEMENT	The task can be performed in the aquafarm under the supervision of senior technicians. The tools and equipment to be used include: 1. Weighing tools such as balances and weighing scales; 2. Plastic buckets, sinks, and other preparation containers; 3. Stirring tools; 4. Mining tools; 5. Sprinkling tools such as water ladles; 6. Protective equipment such as water boots, waterproof one-piece oversuits, rubber gloves, masks and protective masks. 7. Safety gear		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Abide by the preventive measures for health and safety when performing this task; 2. Select appropriate tools and equipment; 3. Inspect the condition of protective equipment; 4. Wear protective equipment; 5. Inspect the condition of tools; 6. Weigh quicklime and other items to remove enemy organisms; 7. Prepare the treating agent according to the usage and dosage; 8. Sprinkle the treating agent; 9. Clean and arrange tools; 10. Store the tools. 11. Observe environmental safety rules and regulations.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Prepare and inspect tools and instruments; 1.2 Use tools normatively; 1.3 Clean and arrange tools; 1.4 Remove the silt and dirt from the bottom of the pond; 1.5 Spread the quicklime evenly on the clean bottom of the pond to ensure coverage of the entire area; 1.6 Monitor and adjust water quality parameters. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 The principle of removing enemy organisms with quicklime; 2.2 The principle of disinfection and sterilization; 2.3 The principle of pH regulation;

	2.4 The principle of acid-base balance for stable water bodies. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Selection of containers for preparation; 3.2 Preparation methods of treating agents. **4.0 Essential Skills** 4.1 Personal protection skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Journal writing skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Pond cleaning with quicklime is performed as per approved rules and regulations.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Construction of filtration and water supply and drainage systems for aquaculture ponds; 2. Methods for inspecting the operation status of aquaculture equipment; 3. Methods for detecting physical indicators of water quality; 4. Chemical reaction between quicklime and water; 5. Methods for detecting chemical indicators of water quality; 6. Methods for adjusting water quality with equipment and drugs; 7. Methods for overhauling electrical and thermal systems; 8. Safety operation knowledge.

OCCUPATION	AQUACULTURE TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	CARRY OUT ENEMY ORGANISM REMOVAL FROM THE AQUAFARM	**DUTY NO.**	401
TASK TITLE	PERFORM ENEMY ORGANISM REMOVAL	**TASK NO.**	4012
PERFORMANCE CRITERIA	The person performing this task must be able to remove the enemy organism in accordance with the standards, regulations and technical requirements for aquaculture technicians.		
RANGE STATEMENT	The task can be performed in the aquafarm under the supervision of senior technicians. The tools and equipment to be used include: 1. Weighing tools such as balances and weighing scales; 2. Measuring tools such as measuring cylinders and cups; 3. Plastic buckets, sinks, and other preparation containers; 4. Stirring tools; 5. Sprinkling tools such as water ladles; 6. Aquaculture ships and supporting tools; 7. Protective equipment such as water boots, waterproof one-piece over suits, rubber gloves, masks and protective masks; 8. Hand nets, fish cages and other tools for removing enemy organisms.		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Abide by the preventive measures for health and safety when performing this task; 2. Select appropriate tools and equipment; 3. Inspect the condition of protective equipment; 4. Wear protective equipment; 5. Inspect the condition of tools; 6. Weigh the items for removing enemy organisms; 7. Measure the items for removing enemy organisms; 8. Prepare the treating agent according to the usage and dosage; 9. Use aquaculture ships; 10. Sprinkle the treating agent; 11. Clean and arrange tools; 12. Store the tools.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Inspect and prepare tools and instruments; 1.2 Use tools normatively; 1.3 Clean up tools. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 The principle of removing enemy organisms by physical methods; 2.2 The principle of removing enemy organisms by chemical methods; 2.3 The principle of giving priority to biological control of pests. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Physical methods of removing enemy organisms;

13. Observe environmental safety rules and regulations.	3.2 Chemical methods of removing enemy organisms. **4.0 Essential Skills** 4.1 Personal protection skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Journal writing skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Enemy organisms are removed from the aquafarm as per approved rules and regulations.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Construction of filtration and water supply and drainage systems for aquaculture ponds; 2. Methods for inspecting the operation status of aquaculture equipment; 3. Methods for detecting physical indicators of water quality; 4. Chemical reaction between quicklime and water; 5. Methods for detecting chemical indicators of water quality; 6. Methods for adjusting water quality with equipment and drugs; 7. Methods for overhauling electrical and thermal systems; 8. Safety operation knowledge.

OCCUPATION	AQUACULTURE TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	CONDUCT FINGERLING PREPARATION	**DUTY NO.**	402
TASK TITLE	DETERMINE FINGERLING SIZE AND QUANTITY	**TASK NO.**	4021
PERFORMANCE CRITERIA	The person performing this task must be able to determine the fingerling size and quantity in accordance with the standards, regulations and technical requirements for aquaculture technicians.		
RANGE STATEMENT	The task can be performed in the aquafarm under the supervision of senior technicians. The tools and equipment to be used include: 1. Measuring tools such as straightedges; 2. Weighing tools such as balances and weighing scales; 3. Sampling tools such as beakers and measuring cylinders; 4. Counting containers such as plastic buckets, sinks and hand nets; 5. Protective equipment such as rubber gloves and masks. 6. Safety gear		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Abide by the preventive measures for health and safety when performing this task; 2. Select appropriate tools and equipment; 3. Inspect the condition of protective equipment; 4. Wear protective equipment; 5. Inspect the condition of tools; 6. Select fingerling samples randomly; 7. Measure the fingerling size; 8. Weigh the fingerling quality; 9. Calculate the fingerling quantity; 10. Clean and arrange tools; 11. Store the tools. 12. Observe environmental safety rules and regulations.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Prepare and inspect tools and instruments; 1.2 Use tools normatively; 1.3 Clean up tools. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 The principle of random sampling; 2.2 The principle of aquaculture systems; 2.3 The principle of safety prevention. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Methods for determining the fingerling size; 3.2 Methods for determining the fingerling quantity. **4.0 Essential Skills** 4.1 Personal protection skills; 4.2 Communication skills;

	4.3 Teamwork skills; 4.4 Journal writing skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The fingerling size and quantity are determined according to the aquaculture varieties and environment.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Safety operation of instruments and equipment; 2. Random sampling; 3. Knowledge of mathematical statistics; 4. Normative measurement knowledge.

OCCUPATION	AQUACULTURE TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	CONDUCT FINGERLING PREPARATION	**DUTY NO.**	402
TASK TITLE	PREPARE FINGERLING STOCKING	**TASK NO.**	4022
PERFORMANCE CRITERIA	The person performing this task must be able to carry out the preparation of fingerling stocking in accordance with the standards, regulations and technical requirements for aquaculture technicians.		
RANGE STATEMENT	The task can be performed in the aquafarm under the supervision of senior technicians. The tools and equipment to be used include: 1. Epidemic disease detection equipment such as in vitro diagnostic reagent kits, PCR instruments, and electrophoresis apparatus; 2. Tools for stocking experiments such as sinks; 3. Tools for disinfecting fingerlings such as plastic buckets; 4. Protective equipment such as water boots, waterproof one-piece oversuits, rubber gloves and masks.		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Abide by the preventive measures for health and safety when performing this task; 2. Select appropriate tools and equipment; 3. Inspect the condition of protective equipment; 4. Wear protective equipment correctly; 5. Inspect the condition of tools; 6. Detect fingerling epidemic diseases; 7. Carry out fingerling stocking experiments; 8. Carry out fingerling disinfection; 9. Clean and arrange tools; 10. Store the tools. 11. Observe environmental safety rules and regulations.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Prepare and inspect tools and instruments; 1.2 Use tools normatively; 1.3 Clean up tools. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 The principle of molecular biological methods for the detection of fingerling epidemic diseases; 2.2 The principle of disinfectant soaking methods for the disinfection of fingerlings. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Methods of detecting fingerling epidemic diseases; 3.2 Methods of fingerling disinfection. **4.0 Essential Skills** 4.1 Personal protection skills; 4.2 Communication skills; 4.3 Teamwork skills;

	4.4 Journal writing skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The preparation of fingerling stocking is carried out according to laid down procedures.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Safety operation of instruments and equipment; 2. Working principles of PCR instruments; 3. The principle of in vitro diagnostic reagent detection; 4. Operation methods of electrophoresis apparatus; 5. Operation methods of pipettes.

OCCUPATION	AQUACULTURE TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	PERFORM FINGERLING ALLOCATION AND STOCKING	**DUTY NO.**	403
TASK TITLE	CARRY OUT FINGERLING ALLOCATION	**TASK NO.**	4031
PERFORMANCE CRITERIA	The person performing this task must be able to allocate fingerlings in accordance with the standards, regulations and technical requirements for aquaculture industry.		
RANGE STATEMENT	The task can be performed in the aquafarm under the supervision of senior technicians. The tools and equipment to be used include: 1. Weighing tools such as balances and weighing scales; 2. Measuring tools such as measuring cylinders and cups; 3. Tools for storaging fingerlings such as plastic buckets; 4. Protective equipment such as rubber gloves and masks. 5. Safety gear		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Abide by the preventive measures for health and safety when performing this task; 2. Select appropriate tools and equipment; 3. Inspect the condition of protective equipment; 4. Wear protective equipment; 5. Determine the stocking density; 6. Estimate the quantity of fingerlings used; 7. Allocate the fingerling; 8. Clean and arrange tools; 9. Store the tools. 10. Observe environmental safety rules and regulations.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Prepare and inspect tools and instruments; 1.2 Use tools normatively; 1.3 Clean and arrange tools; 1.4 Calculate the quantity of fingerlings used. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Fingerling stocking density; 2.2 The principle of adaptation to aquaculture environment; 2.3 The principle of population balance. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Methods of calculating fingerling stocking quantity; 3.2 Methods of fingerling allocation. **4.0 Essential Skills** 4.1 Personal protection skills;

	4.2 Communication skills; 4.3 Teamwork skills; 4.4 Journal writing skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Fingerling allocation is performed according to approved regulations and standards.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Safety operation of instruments and equipment; 2. Reasonable stocking density of aquaculture varieties; 3. Calculation methods of the quantity of fingerlings used; 4. Estimation of aquaculture water volume; 5. Fingerling allocation.

OCCUPATION	AQUACULTURE TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	PERFORM FINGERLING ALLOCATION AND STOCKING	**DUTY NO.**	403
TASK TITLE	CARRY OUT FINGERLING STOCKING	**TASK NO.**	4032
PERFORMANCE CRITERIA	The person performing this task must be able to carry out fingerling stocking in accordance with the standards, regulations and technical requirements for aquaculture industry.		
RANGE STATEMENT	The task can be performed in the aquafarm under the supervision of senior technicians. The tools and equipment to be used include: 1. Transport vehicles; 2. Fingerling storage tools such as packing bags and foam boxes; 3. Stocking ships; 4. Anti-stress drugs; 5. Protective equipment such as water boots, waterproof one-piece oversuits, rubber gloves, masks and life vests. 6. Safety gear		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Abide by the preventive measures for health and safety when performing this task; 2. Select appropriate tools and equipment; 3. Inspect the condition of protective equipment; 4. Wear protective equipment correctly; 5. Transport fingerlings to stocking locations; 6. Transfer fingerlings to stocking ships; 7. Carry out fingerling stocking; 8. Clean and arrange tools; 9. Store the tools. 10. Observe environmental safety rules and regulations.	**Detailed knowledge about:** 4.4 **Methods** The person performing this task must be able to explain how to: 1.1 Prepare and inspect tools and instruments; 1.2 Use tools normatively; 1.3 Clean and arrange tools; 1.4 Choose transport vehicles. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Working principles of fingerling packing bags; 2.2 The principle of anti-stress drugs effects. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Methods of fingerling stocking; 3.2 Methods of using anti-stress drugs. **4.0 Essential Skills** 4.1 Personal protection skills;

	4.2 Communication skills; 4.3 Teamwork skills; 4.4 Journal writing skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Fingerling stocking is carried out according to approved industry standards and regulations.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Safety operation of instruments and equipment; 2. Driving of transport vehicles; 3. Driving of stocking ships; 4. Oxygen filling and packing of packing bags.

OCCUPATION	AQUACULTURE TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	PREPARE AND STOCK BEFORE ADULT AQUACULTURE	**DUTY NO.**	404
TASK TITLE	PERFORM PRELIMINARY PREPARATION OF AQUACULTURE	**TASK NO.**	4041
PERFORMANCE CRITERIA	The person performing this task must be able to carry out the preliminary preparation of aquaculture in accordance with the standards, regulations and technical requirements for aquaculture technicians.		
RANGE STATEMENT	The task can be performed in the aquafarm under the supervision of senior technicians. The tools and equipment to be used include: 1. Aquaculture ponds or aquaculture equipment; 2. Water circulation equipment such as pumps; 3. Oxygen supply equipment such as oxygen pumps; 4. Heating equipment such as heating pipes; 5. Salinometers; 6. Thermometers; 7. Water quality testing tools or reagents. 8. Safety gear		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Abide by the preventive measures for health and safety when performing this task; 2. Select appropriate tools and equipment; 3. Inspect the condition of aquaculture ponds; 4. Inspect the operation status of aquaculture equipment; 5. Inspect physical indicator testing tools such as thermometers; 6. Detect physical indicators of water quality; 7. Fill in detection record tables of water quality; 8. Inspect chemical indicator testing tools such as PH meters; 9. Detect chemical indicators of water quality; 10. Adjust water quality with equipment and drugs; 11. Clean up the tools;	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Prepare and inspect tools and instruments; 1.2 Use tools normatively; 1.3 Carry out equipment operation and maintenance. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 The principle of constructing aquaculture systems; 2.2 The principle of detecting physical and chemical indicators of water bodies; 2.3 The principle of adjusting and controlling aquaculture water quality. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Methods of constructing aquaculture systems; 3.2 Methods of detecting physical and chemical indicators of water bodies;

12. Store the tools. 13. Observe environmental safety rules and regulations.	3.3 Methods of adjusting aquaculture water quality. **4.0 Essential Skills** 4.1 Personal protection skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Journal writing skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The preliminary preparation of aquaculture is carried out in accordance with the Aquaculture industry standards.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Construction of filtration and water supply and drainage systems for aquaculture ponds; 2. Methods for inspecting the operation status of aquaculture equipment; 3. Methods for detecting physical indicators of water quality; 4. Completion of water quality testing record tables; 5. Methods for detecting chemical indicators of water quality; 6. Methods for adjusting water quality with equipment and drugs; 7. Methods for overhauling electrical and thermal systems; 8. Safety operation knowledge.

OCCUPATION	AQUACULTURE TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	PREPARE AND STOCK BEFORE ADULT AQUACULTURE	**DUTY NO.**	404
TASK TITLE	CARRY OUT STOCKING	**TASK NO.**	4042
PERFORMANCE CRITERIA	The person performing this task must be able to carry out stocking in accordance with the standards, regulations and technical requirements for aquaculture technicians.		
RANGE STATEMENT	The task can be performed in the aquafarm under the supervision of senior technicians. The tools and equipment to be used include: 1. Transport vehicles; 2. Packaging bags or loading containers; 3. Oxygen supply equipment; 4. Water pipes; 5. Thermometers; 6. Microscopes; 7. Disinfection tools such as potassium permanganate; 8. Anti-stress drugs. 9. Safety gear		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Abide by the preventive measures for health and safety when performing this task; 2. Select appropriate tools and equipment; 3. Test the water before stocking; 4. Determine the stocking density; 5. Inspect the condition of transport vehicles; 6. Inspect the water quality condition; 7. Adapt to temperature before stocking; 8. Adapt to water quality before stocking; 9. Disinfect the stocking objects; 10. Use the anti-stress drugs; 11. Adjust water quality with equipment and drugs; 12. Clean up the tools; 13. Store the tools.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Prepare and inspect tools and instruments; 1.2 Use tools normatively; 1.3 Carry out equipment operation and maintenance. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 The principle of reasonable stocking density; 2.2 The principle of detecting physical and chemical indicators of water quality; 2.3 The principle of correct stocking of aquaculture objects. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Methods of determining stocking density; 3.2 Methods of detecting physical and chemical indicators of water quality;

14. Observe environmental safety rules and regulations.	3.3 Methods of aquaculture objects stocking. **4.0 Essential Skills** 4.1 Personal protection skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Journal writing skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The stocking work is carried out in accordance with the standards for aquaculture industry.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Operations of testing the water before stocking; 2. Knowledge of determining stocking density; 3. Inspection of the condition of transport vehicles; 4. Inspection of the water quality condition; 5. Methods of adapting temperature before stocking; 6. Methods of adapting water quality before stocking; 7. Methods of disinfecting the stocking objects; 8. Knowledge of using anti-stress drugs; 9. Knowledge of adjusting water quality with equipment and drugs; 10. Safety operation knowledge.

OCCUPATION	AQUACULTURE TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	CONDUCT BASIC OPERATION OF THE AQUACULTURE PROCESS	**DUTY NO.**	405
TASK TITLE	PERFORM DAILY MANAGEMENT	**TASK NO.**	4051
PERFORMANCE CRITERIA	The person performing this task must be able to carry out daily management in accordance with the standards, regulations and technical requirements for aquaculture technicians.		
RANGE STATEMENT	The task can be performed in the aquafarm under the supervision of senior technicians. The tools and equipment to be used include: 1. Weighing tools such as balances and weighing scales; 2. Measuring tools such as measuring cylinders and cups; 3. Plastic buckets, sinks, and other preparation containers; 4. Stirring tools; 5. Sprinkling tools such as water ladles; 6. Aquaculture ships and supporting tools; 7. Protective equipment such as water boots, waterproof one-piece oversuits, rubber gloves, masks and protective masks; 8. Oxygenation equipment such as aerators; 9. Water quality improvers; 10. Feedstuffs. 11. Safety gear		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Abide by the preventive measures for health and safety when performing this task; 2. Select appropriate tools and equipment; 3. Carry out drainage and decontamination operations; 4. Carry out water change operations; 5. Weigh the feedstuff; 6. Feed the feedstuff; 7. Detect physical and chemical indicators of water quality; 8. Weigh the drugs for adjusting water quality; 9. Prepare the drugs for adjusting water quality; 10. Use aquaculture ships;	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Prepare and inspect tools and instruments; 1.2 Use tools normatively; 1.3 Carry out equipment operation and maintenance. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 The principle of feeding feedstuffs; 2.2 The principle of adjusting water quality; 2.3 The principle of using pesticides. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Methods of feeding feedstuffs;

11. Sprinkle drugs; 12. Use equipment to adjust water quality; 13. Clean up the tools; 14. Store the tools. 15. Observe environmental safety rules and regulations.	3.2 Methods of adjusting water quality; 3.3 Methods of standard aquaculture. **4.0 Essential Skills** 4.1 Personal protection skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Journal writing skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The daily management of aquaculture is carried out in accordance with the Aquaculture industry standards.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Methods of drainage and decontamination operations; 2. Methods of water change operations; 3. Methods of weighing feedstuffs; 4. Methods of feeding feedstuffs; 5. Methods of detecting physical and chemical indicators of water quality; 6. Methods of adjusting water quality; 7. Methods of using aquaculture ships; 8. Methods of sprinkling drugs; 9. Safety operation knowledge.

OCCUPATION	AQUACULTURE TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	CONDUCT BASIC OPERATION OF THE AQUACULTURE PROCESS	**DUTY NO.**	405
TASK TITLE	CARRY OUT DISEASE PREVENTION AND CONTROL	**TASK NO.**	4052
PERFORMANCE CRITERIA	The person performing this task must be able to carry out disease prevention and control in accordance with the standards, regulations and technical requirements for aquaculture industry.		
RANGE STATEMENT	The task can be performed in the aquafarm under the supervision of senior technicians. The tools and equipment to be used include: 1. Weighing tools such as balances and weighing scales; 2. Measuring tools such as measuring cylinders and cups; 3. Plastic buckets, sinks, and other preparation containers; 4. Stirring tools; 5. Sprinkling tools such as water ladles; 6. Aquaculture ships and supporting tools; 7. Diagnostic tools such as microscopes; 8. Protective equipment such as water boots, waterproof one-piece oversuits, rubber gloves, masks and protective masks.		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	UNDERPINNING KNOWLEDGE
The person performing this task must be able to do the following: 1. Abide by the preventive measures for health and safety when performing this task; 2. Select appropriate tools and equipment; 3. Weigh drugs for disease prevention; 4. Prepare drugs for disease prevention; 5. Use aquaculture ships; 6. Sprinkle drugs; 7. Obtain diseased aquatic animal individuals; 8. Use tools such as microscopes to diagnose diseases; 9. Weigh therapeutic drugs; 10. Prepare therapeutic drugs; 12. Sprinkle drugs; 13. Clean up the tools; 14. Store the tools.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Prepare and inspect tools and instruments; 1.2 Use tools normatively; 1.3 Carry out equipment operation and maintenance. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 The principle of preventing aquatic animal diseases; 2.2 The principle of diagnosing aquatic animal diseases; 2.3 The principle of treating aquatic animal diseases. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Disease prevention of aquatic animals; 3.2 Disease diagnosis of aquatic animals; 3.3 Disease treatment of aquatic animals.

15. Observe environmental safety rules and regulations.	**4.0 Essential Skills** 4.1 Personal protection skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Journal writing skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Aquaculture disease prevention and control is carried out in accordance with the standards for aquaculture technicians.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Methods of using prophylactic drugs in aquaculture; 2. Methods of using aquaculture ships; 3. Methods of obtaining diseased aquatic animal individuals; 4. Methods of using equipment for diagnosing diseases such as microscopes; 5. Knowledge of pathogen discrimination; 6. Knowledge of correct selection of therapeutic drugs; 7. Methods of dispensing therapeutic drugs; 8. Methods of sprinkling drugs; 9. Methods of safety operation; 10. Methods for the safe handling of diseased fish.

OCCUPATION	AQUACULTURE TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	PERFORM FISHING PROCESS AND NETS REPAIR	**DUTY NO.**	406
TASK TITLE	CARRY OUT FISHING	**TASK NO.**	4061
PERFORMANCE CRITERIA	The person performing this task must be able to carry out fishing in accordance with the standards, regulations and technical requirements for aquaculture technicians.		
RANGE STATEMENT	The task can be performed in the aquafarm under the supervision of senior technicians. The tools and equipment to be used include: 1. Fishing tools such as gill nets, purse seines, trawls, floor nets, fish cages, and hand nets; 2. Large temporary storage containers such as plastic buckets and sinks; 3. Aeration devices such as small inflatable pumps, air stones and gas lines; 4. Aquaculture ships and supporting tools; 5. Protective equipment such as water boots, waterproof one-piece oversuits, rubber gloves, masks and protective masks.		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	UNDERPINNING KNOWLEDGE
The person performing this task must be able to do the following: 1. Abide by the preventive measures for health and safety when performing this task; 2. Select appropriate tools and equipment; 3. Inspect the condition of protective equipment; 4. Wear protective equipment; 5. Inspect the status of fishing tools and inflatable equipment; 6. Place fishing tools; 7. Transfer the aquaculture object into temporary storage containers by hand nets; 8. Use the aquaculture ship to transport aquaculture objects to the shore (this step can be omitted if on the shore); 9. Move the aquaculture object to the transport vehicle; 10. Clean and arrange tools; 11. Store the tools. 12. Observe environmental safety rules and regulations.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Prepare and inspect tools and instruments; 1.2 Use tools normatively; 1.3 Carry out equipment operation and maintenance. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 The principle of choosing nets; 2.2 The principle of raw materials; 2.3 The principle of economic benefits. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Methods of using nets; 3.2 Methods of using fishing tools; 3.3 Methods of operating tools. **4.0 Essential Skills** 4.1 Personal protection skills;

	4.2 Communication skills; 4.3 Teamwork skills; 4.4 Journal writing skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Fishing process is carried out in accordance with the standards for aquaculture industry.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Methods of using fishing tools such as gill nets, purse seines, trawls, floor nets, fish cages, and hand nets; 2. Methods of choosing nets and meshes; 3. Methods of using oxygenating equipment; 4. Methods of using aquaculture ships; 5. Methods of using safety protection tools.

OCCUPATION	AQUACULTURE TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	PERFORM FISHING PROCESS AND NETS REPAIR	**DUTY NO.**	406
TASK TITLE	CARRY OUT REPAIR OF NETS	**TASK NO.**	4062
PERFORMANCE CRITERIA	The person performing this task must be able to repair nets in accordance with the standards, regulations and technical requirements for aquaculture technicians.		
RANGE STATEMENT	The task can be performed in the aquafarm under the supervision of senior technicians. The tools and equipment to be used include: 1. Shuttles or hole-punching machines; 2. Cutting tools such as scissors; 3. Lines; 4. Protective equipment such as cotton gloves and masks. 5. Safety gear		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Abide by the preventive measures for health and safety when performing this task; 2. Inspect the condition of protective equipment; 3. Wear protective equipment; 4. Determine the size of the hole in the fishing net; 5. Select appropriate tools and equipment; 6. Repair the fishing net; 7. Dry and organize tools; 8. Store the tools. 9. Observe environmental safety rules and regulations.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Prepare and inspect tools and instruments; 1.2 Use tools normatively; 1.3 Carry out equipment operation and maintenance. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 The principle of determining the form and size of the hole; 2.2 The principle of raw materials; 2.3 The principle of economic benefits. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Methods of repairing nets; 3.2 Methods of using shuttles and hole-punching machines. **4.0 Essential Skills** 4.1 Personal protection skills; 4.2 Communication skills;

	4.3 Teamwork skills; 4.4 Journal writing skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Nets are repaired in accordance with the standards for aquaculture technicians.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Methods of using shuttles and hole-punching machines; 2. Methods of using scissors; 3. Properties of various nets and methods of choosing lines; 4. Methods of using protective equipment.

OCCUPATION	AQUACULTURE TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	CONDUCT BASIC OPERATION FOR LIVE BODY TRANSPORTATION	**DUTY NO.**	407
TASK TITLE	CARRY OUT EQUIPMENT PREPARATION BEFORE TRANSPORTATION	**TASK NO.**	4071
PERFORMANCE CRITERIA	The person performing this task must be able to prepare the equipment before live body transportation in accordance with the standards, regulations and technical requirements of aquaculture industry.		
RANGE STATEMENT	The task can be performed in the aquafarm under the supervision of senior technicians. The tools and equipment to be used include: 1. Transport vehicles; 2. Packing bags and foam boxes; 3. Oxygen supply equipment such as small inflatable pumps, air stones and gas lines; 4. Temperature control equipment such as heating rods; 5. Loading and unloading tools such as buckets; 6. Emergency power supply equipment. 7. Safety gear		

EVIDENCE REQUIREMENT	
PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Analysis of the characteristics of the live body to be transported; 2. Determine the mode of live transportation; 3. Inspect and maintain transport vehicles; 4. Inspect and maintain loading and unloading tools such as plastic buckets; 5. Inspect and maintain aeration devices such as small inflatable pumps, air stones and gas lines; 6. Inspect emergency power supply equipment. 7. Observe health, occupational and environmental safety rules and regualtions.	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Prepare and inspect tools and instruments; 1.2 Use tools normatively; 1.3 Carry out equipment operation and maintenance. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Basic principle of live transportation; 2.2 The principle of choosing transportation modes; 2.3 Biological characteristics of live transportation. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 The refrigeration range of the transport vehicle; 3.2 The insulation range of the transport vehicle; 3.3 The retention range of dissolved oxygen in water bodies;

	3.4 Water recycling and purification capacity; 3.5 The general process and precautions of live transportation. **4.0 Essential Skills** 4.1 Personal protection skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Journal writing skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Equipment preparation before transportation is done in accordance with the standards of aquaculture industry.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Knowledge of transport vehicle selection; 2. Knowledge of transportation method selection; 3. Methods of vehicle maintenance; 4. Methods of selecting containers for transportation; 5. Methods of using inflation devices; 6. Knowledge of vehicle power supply; 7. Temperature control methods.

OCCUPATION	AQUACULTURE TECHNICIAN	**OCCUPATION CODE**	
DUTY TITLE	CARRY OUT BASIC OPERATION FOR LIVE BODY TRANSPORTATION	**DUTY NO.**	407
TASK TITLE	CARRY OUT BASIC OPERATION OF ADULT LIVE BODY TRANSPORTATION	**TASK NO.**	4072
PERFORMANCE CRITERIA	The person performing this task must be able to carry out the basic operation of adult transportation in accordance with the standards, regulations and technical requirements for aquaculture technicians.		
RANGE STATEMENT	The task can be performed in the aquafarm under the supervision of senior technicians. The tools and equipment to be used include: 1. Fishing tools such as hand nets; 2. Open or closed fish loading containers (live water tank transport vehicles) and supporting tools; 3. Aeration devices such as small inflatable pumps, air stones and gas lines; 4. Protective equipment such as water boots, waterproof one-piece oversuits, rubber gloves and masks; 5. Ice cubes. 6. Safety gear		

EVIDENCE REQUIREMENT

PRACTICAL PERFORMANCE	**UNDERPINNING KNOWLEDGE**
The person performing this task must be able to do the following: 1. Observe health, occupational and environmental safety rules and regualtions; 2. Select appropriate tools and equipment; 3. Inspect the condition of protective equipment; 4. Wear protective equipment; 5. Check the status of transportation and inflation equipment; 6. Use the hand net to move the aquaculture objects into the carrier, drive the carrier to the designated place, and then unload the aquaculture objects; pay attention to the state of the aquaculture objects in the transportation tool during the transportation process; replace the water (including ice) in about	**Detailed knowledge about:** **1.0 Methods** The person performing this task must be able to explain how to: 1.1 Prepare and inspect tools and instruments; 1.2 Use tools normatively; 1.3 Carry out equipment operation and maintenance. **2.0 Principles** The person performing this task must be able to explain the following principles: 2.1 Physiological characteristics of aquaculture objects; 2.2 The principle of adjusting water quality; 2.3 The principle of diet and nutrition; 2.4 The principle of observation and monitoring; 2.5 The principle of prevention and response. **3.0 Theories** The person performing this task must be able to explain the following: 3.1 Methods of using inflation devices;

4 hours if transported for a long time; 7. Clean up transportation and inflation tools; 8. Store transportation and inflation tools.	3.2 The temperature fluctuation range during live transportation; 3.3 Selection and preparation of live transportation containers; 3.4 Diet management during transportation; 3.5 Preparation for emergency situations. **4.0 Essential Skills** 4.1 Personal protection skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Journal writing skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Basic operation of adult live body transportation is carried out in accordance with the standards of aquaculture industry.
CIRCUMSTANTIAL KNOWLEDGE	**Detailed knowledge about:** 1. Knowledge of transport vehicle selection; 2. Knowledge of transportation method selection; 3. Methods of vehicle maintenance; 4. Methods of selecting containers for transportation; 5. Methods of using inflation devices; 6. Knowledge of vehicle power supply; 7. Methods of using hand nets; 8. Methods of changing water during transportation; 9. Methods of storing transportation and inflation devices; 10. Methods of determining the condition of aquaculture objects; 11. Temperature control methods.

TABLE 1: DACUM CHART FOR AQUACULTURE TECHNICIAN - NTA LEVEL 4

DUTIES	TASKS	ENABLERS
1.0 Carry out enemy organism removal from the aquafarm	1.1 Perform Pond treatment. 1.2 Perform enemy organism removal. 1.3 Observe biosecurity at farm level	**General skills and knowledge** · Safety operation of instruments and equipment · Life history of aquaculture objects · Regulation and control of aquaculture water environment · Feeding operation of aquaculture inputs · Personal protection skills · Communication skills **Tools and equipment** · Weighing tools such as balances and weighing scales · Plastic buckets, sinks, and other preparation containers · Stirring tools · Mining tools · Sprinkling tools such as water ladles · Protective equipment such as water boots, waterproof one-piece oversuits, rubber gloves, masks and protective masks **Materials** · Pond cleaning drugs such as quicklime, tea meal, bleach powder and calcium hypochlorite **Requirements for employees** · Teamwork spirit, integrity, time management and commitment
2.0 Conduct fingerling preparation	2.1 Determine fingerling (fish seed) size, quality and quantity. 2.2 Prepare fingerling stocking.	**General skills and knowledge** · Safety operation of instruments and equipment · Life history of aquaculture objects · Regulation and control of aquaculture water environment · Feeding operation of aquaculture inputs · System carrying capacity and stockckingling · Personal protection skills

DUTIES	TASKS	ENABLERS
		· Communication skills **Tools and equipment** · Measuring tools such as straightedges · Weighing tools such as balances and weighing scales · Sampling tools such as scoop net, beakers and measuring cylinders · Counting containers such as plastic buckets, sinks and hand nets · Protective equipment such as rubber gloves and masks · Epidemic disease detection equipment such as PCR instruments and electrophoresis apparatuses **Materials** · Fingerling epidemic disease detection reagents **Requirements for employees** · Teamwork spirit, integrity, time management and commitment
3.0 Perform fingerling allocation and stocking	3.1 Carry out fingerling allocation. 3.2 Carry out fingerling stocking.	**General skills and knowledge** · Safety operation of instruments and equipment · Life history of aquaculture objects · Regulation and control of aquaculture water environment · Feeding operation of aquaculture inputs · Personal protection skills · Communication skills **Tools and equipment** · Weighing tools such as balances and weighing scales · Measuring tools such as measuring cylinders and cups · Fingerling storage tools such as packing bags, foam boxes and plastic buckets · Protective equipment such as rubber gloves and masks

DUTIES	TASKS	ENABLERS
		· Transport vehicles · Stocking ships · Protective equipment such as water boots, waterproof one-piece oversuits, rubber gloves, masks and protective masks **Materials** · Anti-stress drugs **Requirements for employees** · Teamwork spirit, integrity, time management and commitment
4.0 Prepare and stock before adult aquaculture	4.1 Perform preliminary preparation of aquaculture. 4.2 Carry out stocking.	**General skills and knowledge** · Safety operation of instruments and equipment · Life history of aquaculture objects · Regulation and control of aquaculture water environment · Feeding operation of aquaculture inputs · Personal protection skills · Communication skills **Tools and equipment** · Aquaculture ponds or aquaculture equipment · Water circulation equipment such as pumps · Oxygen supply equipment such as oxygen pumps · Heating equipment such as heating pipes · Transport vehicles · Packaging bags or loading containers **Materials** · Water quality detection reagents, disinfectants such as potassium permanganate and anti-stress drugs **Requirements for employees** · Teamwork spirit, integrity, time management and commitment

DUTIES	TASKS	ENABLERS
5.0 Conduct basic operation of the aquaculture process	5.1 Perform daily management. 5.2 Carry out disease prevention and control.	**General skills and knowledge** · Safety operation of instruments and equipment · Fish Biology and ecology · Regulation and control of aquaculture water environment · Feeding operation of aquaculture inputs · Personal protection skills · Communication skills **Tools and equipment** · Weighing tools such as balances and weighing scales · Measuring tools such as measuring cylinders and cups · Stirring tools · Aquaculture ships/boat and supporting tools · Sprinkling tools such as water ladles, airators, padles · Protective equipment such as water boots, waterproof one-piece oversuits, rubber gloves, masks and protective masks · Oxygenation equipment such as aerators **Materials** · Water quality improvers and feedstuffs · Reagents (water quality kits) **Requirements for employees** · Teamwork spirit, integrity, time management and commitment
6.0 Perform fishing process and nets repair	6.1 Carry out fishing. 6.2 Carry out repair of nets.	**General skills and knowledge** · Safety operation of instruments and equipment · Life history of aquaculture objects · Regulation and control of aquaculture water environment · Feeding operation of aquaculture inputs · Personal protection skills

DUTIES	TASKS	ENABLERS
		· Communication skills **Tools and equipment** · Fishing tools such as gill nets, purse seines, trawls, floor nets, fish cages, and hand nets · Large temporary storage containers such as plastic buckets and sinks · Aeration devices such as small inflatable pumps, air stones and gas lines · Aquaculture ships and supporting tools · Protective equipment such as water boots, waterproof one-piece oversuits, rubber gloves, masks and protective masks **Materials** · Lines for nets repair **Requirements for employees** · Teamwork spirit, integrity, time management and commitment
7.0 Conduct Basic operation for live body transportation	7.1 Carry out equipment preparation before transportation. 7.2 Carry out basic procedures for live fish transportation.	**General skills and knowledge** · Safety operation of instruments and equipment · Life history of aquaculture objects · Regulation and control of aquaculture water environment · Feeding operation of aquaculture inputs · Personal protection skills · Communication skills **Tools and equipment** · Transport vehicles · Packing bags and foam boxes · Oxygen supply equipment such as small inflatable pumps, air stones and gas lines · Temperature control equipment such as heating rods · Loading and unloading tools such as buckets

DUTIES	TASKS	ENABLERS
		· Emergency power supply equipment **Materials** · Ice cubes **Requirements for employees** · Teamwork spirit, integrity, time management and commitment