AQUACULTURE OPERATIONS

ISCED UNIT CODE: 0831 451 05A

TVETCDACC UNIT CODE: AQ/CU/AM/CR/01/5/MA

UNIT DURATION: 180 HOURS

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Perform Aquaculture operations

UNIT DESCRIPTION

This unit specifies the competencies required to perform aquaculture operations. These include monitoring fish stock, water quality, handling fish stock, feeding fish stock, maintaining Recirculating Aquaculture Systems (RAS), maintaining fish health and managing farm disasters in agricultural production.

SUMMARY OF LEARNING OUTCOMES

1. Monitor fish stock
2. Monitor water quality
3. Handle fish stock
4. Feed fish stock
5. Maintain Recirculating Aquaculture Systems (RAS)
6. Maintain fish health

ELEMENT AND PERFORMANCE CRITERIA

LEARNING OUTCOME	CONTENT	SUGGESTED METHOD OF ASSESMENT
1. Monitor fish stock	1.1 Personal protective equipment • Gloves • Eye production • Lab coat • Rubber boots (steel toe) 1.2 Risk factors affecting health of stock • Scale loss • Loss of buoyancy	• Practical • Project • Third party report • Portfolio of evidence • Written tests • Oral questioning

	balance • Physical injury to mucous membranes Eyes • Gills and fins 1.3 Checking of monitoring equipment • YSI handheld electronic meter • Doren water sampler • Buckets • Sample jars • Notebook- 1.4 Checking of house damage • Hatchery tanks • Net Pen • Pond 1.5 Positioning of monitoring equipment 1.6 Carrying out monitoring activities 1.7 Recording of monitoring findings	
1. Monitor water quality	1.1 Personal protective equipment 1.2 Tools and equipment 1.3 Monitoring of water quality parameters • Temperature • Oxygen • Ph • Ammonia • Total nitrogen and phosphorus • Turbidity 1.4 Application of water treatment	• Practical • Project • Third party report • Portfolio of evidence • Written tests • Oral questioning
2. Handle fish stock	2.1 Selection of tools and equipment 2.2 Conditions impacting fish stock • Rain	• Practical • Project • Third party report • Portfolio of

	• Wind and extreme Heat • Algal Bloom • Increased vessel traffic around net pen 2.3 Preparation of housing structure 2.4 Fish seeds selection • Fry • Advanced fry • Fingerlings • Sub-adult fish 2.5 Stocking of fish seeds 2.6 Maintenance of fish stock records 2.7 Mechanisms for storing fish stock data (flash drives, hard drives). from digital literacy	evidence • Written tests • Oral questioning
3. Feed fish stock	3.1 Personal protective equipment 3.2 Feeding tools and equipment 3.3 Fish feed types • Natural • Artificial feeds 3.4 Feeding of fish • Calculation of FCR • Calculation of feeding rate 3.5 Removing of uneaten feed 3.6 Monitoring of fish feeding 3.7 Storing of fish feed	• Practical • Project • Third party report • Portfolio of evidence • Written tests • Oral questioning
4. Maintain Recirculating Aquaculture	4.1 Personal protective equipment 4.2 Tools and equipment 4.3 Pumps operation • Submersible	• Practical • Project • Third party report • Portfolio of evidence

Systems (RAS)	• Centrifugal • Diaphragm Pumps 4.4 Servicing of the pumping system • Inspecting the motor • Lubrication • Replace damaged seals and horses • Mechanical inspection of couplings • Filters • Pump flanges • Checking mounting points status 4.5 Unclogging of the filtration system 4.6 Sterilization of filtration water	• Written tests • Oral questioning
5. Maintain fish health	5.1 Personal protective equipment 5.2 Tools and equipment 5.3 Disease signs and symptoms 5.4 Quarantine of fish stock 5.5 Recording of abnormal fish stock behavior	• Practical • Project • Third party report • Portfolio of evidence • Written tests • Oral questioning

Suggested Methods of Instruction

- Project
- Demonstration
- Practicals
- Discussions
- Direct instruction

Recommended Resources for 25 Trainees

Category/Item	**Description/specification**	**Quantity**	**Recommended ratio (item: Trainee)**
Desktop		25	1:1

computers/laptops			
Internet connection			
Projector Printer		1 1	1:25 1:25
Feed mixer		1	1:25
Sample jars		1	1:25
Flame photometer		1	1:25
Tanks		1	1:25
Feed extruder		1	1:25
Assorted sieve		1	1:25
Spade		5	1:5
Weighing scale		5	1:5
Doren water sampler		1	1:25
Electronic meter		1	1:25
Buckets		5	1:5
Note book and pens		5	1:5