

Syllabus for Aquaculture Farming Assistant (Freshwater)

Course Name	Aquaculture Farming Assistant (Freshwater)
Sector	AGRICULTURE
Course Code	AGR/2024/AFAF/287
Occupation	Aquaculture Farming Assistant (Freshwater)
Job Description	Aquaculture Farming Assistant (Freshwater) plays a crucial role in ensuring the successful identification, cultivation, and management of freshwater finfish and shellfish, implementing effective water quality practices, and overseeing pond operations from nursery to grow-out stages. Additionally, they are responsible for controlling aquatic weeds and mitigating algal blooms to maintain a healthy aquaculture environment.
Anticipated Volume of Training	390 Hrs (Theory- 90 Hrs + Practical- 180 Hrs, Employability Skill – 60 Hrs, OJT: 60 Hrs.)
NSQF LEVEL	3
Trainees' Entry Qualification	Grade 10 OR Grade 8 pass and pursuing continuous schooling in regular school with vocational subject OR 8th grade pass with 2 yrs relevant experience OR Previous relevant Qualification of NSQF Level 2 with one yr experience OR Previous relevant Qualification of NSQF Level 2.5 with 6 months experience
Trainers Qualification	Bachelor in Fishery Science (B.F.Sc) OR B. Sc. (Aquaculture)/B.Sc. (IFF) with 6 months experience

Structure of Course:

Module No.	Module name	Outcome	Theory (Hrs)	Practical (Hrs)	Total (Hrs) [Multiple of 30]
1	Identification of finfish and shellfish	Identify commercially important different Freshwater finfish and shellfish and their economic importance	30	60	90
2	Liming in Freshwater Aquaculture	Explain different types of liming along with its appropriate uses.	20	40	60
3	Manuring and	Recognize various	10	20	30

Module No.	Module name	Outcome	Theory (Hrs)	Practical (Hrs)	Total (Hrs) [Multiple of 30]
	Fertilizers in Freshwater Aquaculture	manures and fertilizers, including their types, doses, and impacts on freshwater culture systems.			
4	Aquatic Weeds Management	Identify various aquatic weeds and implement effective control techniques.	10	20	30
5	Nursery, rearing, and grow out pond management	Execute the proper management procedure for nursery, rearing, and grow-out ponds in aquaculture.	20	40	60
5	OJT	Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).	--	60	60
6	Employability Skill	As per guided curriculum	60	--	60
TOTAL:			150	240	390

SYLLABUS:

Module No. 1: Identification of finfish and shellfish

Outcome: Identify commercially important different Freshwater finfish and shellfish and their economic importance

Theory Content:

1.1 Finfish: The taxonomic position and their identifying characters. Classify the freshwater finfishes based on their physical characters and taxonomic features.

1.2 Shellfish: The taxonomic position and their identifying characters. Classify the freshwater shellfishes based on their physical characters and taxonomic features

1.3 Feeding habit: Information on feeding habit of freshwater finfish and shell fishes

1.4 Breeding pattern: Information on breeding pattern of freshwater finfish and shell fishes

Practical Content:

- Collection of finfishes and shellfishes from freshwater resources
- Group the finfishes: Based on common characters fishes are categorized into different groups/orders.
- Identify the finfishes: Identify them based on characters Size, shape, color, etc.

- Group the shellfishes: Based on common characters fishes are categorized into different groups/orders.
- Identify the shellfishes: Identify them based on characters Size, shape, color, etc.

Tools & Equipment needed: Specimen Jar, Formaline, Tray, Hand gloves, Forceps.

Module No. 2: Liming in Freshwater Aquaculture

Outcome: Explain different types of liming along with its appropriate uses.

Theory Content:

2.1 Importance of Liming:

- Exploring the various advantages and benefits of using lime in freshwater aquaculture.

2.2 Types of Lime:

- Understanding different types of lime and their specific roles and importance in aquaculture practices.

2.3 Dosages of Liming:

- Determining the appropriate dosages of lime required during pond preparation and throughout the culture periods.

Practical Content:

- **Identifying:** Identify the quality of lime sold in the market
- **Testing the efficacy:** Check the efficacy of lime in laboratory as well as in pond
- **Application:** Applying lime at the pond and observe the effects

Tools & Equipment needed: Quality limes, Inorganic fertilizers, Manures.

Module No. 3: Manuring and Fertilizers in Freshwater Aquaculture

Outcome: Recognise various manures and fertilizers, including their types, doses, and impacts on freshwater culture systems.

Theory Content:

3.1 Manures:

- Exploring different types of manures used in freshwater aquaculture.
- Understanding recommended doses and their impact on culture systems.

3.2 Fertilizers:

- Studying various fertilizers applicable to freshwater environments.
- Analyzing recommended doses and the influence on culture systems.

Practical Content:

- Identify the different manures and fertilizers.
- Hands-on experience in distinguishing quality limes, inorganic fertilizers, and organic manures.

Tools & Equipment needed: Quality limes, Inorganic fertilizers, Manures.

Module No. 4: Aquatic Weeds Management

Outcome: Identify various aquatic weeds and implement effective control techniques.

Theory Content:

4.1 Types of Aquatic Weeds:

- Understanding the diversity of aquatic weeds.
- Classification based on morphology and growth characteristics.

4.2 Easy Control Techniques:

- Exploring practical and sustainable methods for aquatic weed control.
- Integrating biological, chemical, and mechanical control strategies.

Practical Content:

4.1 Identify different aquatic weeds

4.2 Hands-on experience in applying various control techniques.

Tools & Equipment needed: A tool with tines or blades, Weed Cutter or Scythe, Backpack Sprayer, Boom Sprayer, Granular Spreader, Biopesticides, Aquatic Organisms, Biopesticides.

Module No. 5: Nursery, rearing, and grow out pond management

Outcome: Execute the proper management procedure for nursery, rearing, and grow-out ponds in aquaculture.

Theory Content:

5.1 Idea on the different protocols for pre stocking, post stocking and stocking management

5.2 Different feed preparation and feeding schedule

5.3 Different common diseases

Practical Content:

- Hands on training for pond preparation and pre-stocking management
- Hands on training for stocking management
- Hands on training for post-stocking management
- Hand on training for home-made feed preparation
- Identify different diseases and its common remedies

Tools & Equipment needed: Water pump 3hp, Cemented vat, Cast net, Drag net, Lime, Feed, Fish seed, Different fertilizers, Bucket

Module No.5 : OJT

Outcome: Work in real job situation with special emphasis on basic safety and hazards in this domain

Practical Content:

Assessor will check report prepared for this component of Practical training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor for **60 Hours**.)

Module No. 6: Employability Skills (60 Hrs)

Key Learning Outcomes

Introduction to Employability Skills

Duration: 1.5 Hours

After completing this programme, participants will be able to:

1. Discuss the Employability Skills required for jobs in various industries
2. List different learning and employability related GOI and private portals and their usage

Constitutional values - Citizenship

Duration: 1.5 Hours

3. Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen
4. Show how to practice different environmentally sustainable practices.

Becoming a Professional in the 21st Century

Duration: 2.5 Hours

5. Discuss importance of relevant 21st century skills.
6. Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life.
7. Describe the benefits of continuous learning.

Basic English Skills

Duration: 10 Hours

8. Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone
9. Read and interpret text written in basic English
10. Write a short note/paragraph / letter/e -mail using basic English

Career Development & Goal Setting

Duration: 2 Hours

11. Create a career development plan with well-defined short- and long-term goals

Communication Skills

Duration: 5 Hours

12. Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.
13. Explain the importance of active listening for effective communication
14. Discuss the significance of working collaboratively with others in a team

Diversity & Inclusion

Duration: 2.5 Hours

15. Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD
16. Discuss the significance of escalating sexual harassment issues as per POSH act.

Financial and Legal Literacy

Duration: 5 Hours

17. Outline the importance of selecting the right financial institution, product, and service
18. Demonstrate how to carry out offline and online financial transactions, safely and

securely

19. List the common components of salary and compute income, expenditure, taxes, investments etc.
20. Discuss the legal rights, laws, and aids

Essential Digital Skills

Duration: 10 Hours

21. Describe the role of digital technology in today's life
22. Demonstrate how to operate digital devices and use the associated applications and features, safely and securely
23. Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely
24. Create sample word documents, excel sheets and presentations using basic features
25. utilize virtual collaboration tools to work effectively

Entrepreneurship

Duration: 7 Hours

26. Explain the types of entrepreneurship and enterprises
27. Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan
28. Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement
29. Create a sample business plan, for the selected business opportunity

Customer Service

Duration: 5 Hours

30. Describe the significance of analyzing different types and needs of customers
31. Explain the significance of identifying customer needs and responding to them in a professional manner.
32. Discuss the significance of maintaining hygiene and dressing appropriately

Getting Ready for apprenticeship & Jobs

Duration: 8 Hours

33. Create a professional Curriculum Vitae (CV)
34. Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively
35. Discuss the significance of maintaining hygiene and confidence during an interview
36. Perform a mock interview
37. List the steps for searching and registering for apprenticeship opportunities

Learning Outcome – Assessment Criteria

Module No.	Outcome	Assessment Criteria
1	Identify commercially important different Freshwater finfish and shellfish and their economic importance	<ul style="list-style-type: none">• Identify the freshwater finfishes and shellfishes based on their physical character and taxonomic features.• Explain the feeding habits of freshwater finfish and shellfish.• Explain the breeding patterns of freshwater finfish and shellfish.

Module No.	Outcome	Assessment Criteria
2	Explain different types of liming along with its appropriate uses.	<ul style="list-style-type: none"> • List out the advantages of using limes. • Adhere to the application protocol for the usage of lime. • Identify the quality of lime sold in the market and its efficacy in laboratory as well as in pond • Apply lime to the pond and observe the effects • Different types of manures, doses and its impact on culture systems • Identify the different manures and fertilizers
3	Recognise various manures and fertilizers, including their types, doses, and impacts on freshwater culture systems.	<ul style="list-style-type: none"> • Explain different types of manures used in freshwater aquaculture and their recommended doses in freshwater aquaculture. • Identify various fertilizers and their application along with their appropriate doses to freshwater environments. • Distinguish quality limes, inorganic fertilizers, and organic manures for freshwater aquaculture.
4	Identify various aquatic weeds and implement effective control techniques.	<ul style="list-style-type: none"> • Identify the different aquatic weeds • Explains sustainable methods for aquatic weed control. • Explain the diversity of aquatic weeds. • Demonstrates hands-on experience in applying biological, chemical, and mechanical control strategies. • Select appropriate control methods based on weed types and environmental considerations.
5	Execute the proper management procedure for nursery, rearing, and grow-out ponds in aquaculture.	<ul style="list-style-type: none"> • Demonstrates pre-stocking, post-stocking, and stocking protocols. • Explain various feed preparation techniques and formulate feeding schedules. • Recognizes common diseases affecting fish in aquaculture. • Executes hands-on training for pond

Module No.	Outcome	Assessment Criteria
		preparation and stocking management. <ul style="list-style-type: none"> Applies remedies for managing and mitigating common fish diseases.
6	OJT	Assessor will check report prepared for this component of Practical training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor for 60 Hours.)
7	Employability Skills	As per guided curriculum

List of Tools, Equipment & materials needed for 30 Trainees:

Sl No	Items with description	Qty
1.	Identify commercially important different Freshwater finfish and shellfish <ul style="list-style-type: none"> Specimen Jar Big size-10, Medium-10, small-10 Formaline 15 litre Tray 2x1 feet----- 10 nos Hand gloves 10 pairs Forceps medium---3, Big – 3 	
2.	Liming and its importance,, organic and inorganic fertilizers Different quality limes Different inorganic fertilizers Different manures	-one kg each
3	Aquatic Weeds Management	
	A tool with tines or blades	6pcs
	Weed Cutter or Scythe	6pcs
	Backpack Sprayer	2pcs
	Boom Sprayer	2pcs
	Granular Spreader	2pcs
	grass carp	2pcs
	Biopesticides	As required
4.	Nursery, rearing and grow-out pond management in details (required for 200 sq m area for rearing pond)	
	Water pump 3hp	1 pc
	Cemented vat	1 pc
	Cast net	1 pc

SI No	Items with description	Qty
	Drag net	1 pc
	Lime	10 kg
	Feed	25 kg
	Fish seed	4000 nos fry
	Different fertilizers	Urea-1kg, SSP-2 kg
	Bucket	2 pcs
5.	Digital weighing machine 1gm sensitivity	1 no

Marks Distribution

Outcome	Outcome Code	Total Th marks	Total Pr marks	Total OJT marks
Identify commercially important different Freshwater finfish and shellfish and their economic importance	AGR/0265/OC1	50	150	0
Explain different types of liming along with its appropriate uses.	AGR/0265/OC2	30	120	0
Recognize various manures and fertilizers, including their types, doses, and impacts on freshwater culture systems.	AGR/0265/OC3	20	130	0
Identify various aquatic weeds and implement effective control techniques.	AGR/0265/OC4	20	130	0
Execute the proper management procedure for nursery, rearing, and grow-out ponds in aquaculture.	AGR/0265/OC5	30	120	0
Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).	AGR/0265/OC6	0	0	150
Employability Skills – 60 Hrs	DGT/VSQ/N0102	50	0	0