FISHERY MANAGER (FHMR)
Core Qualification File Syllabus

DETAIL COURSE CURRICULUM:

Course No.	Course Title	Learning Hours
FRM 01	Introduction to Freshwater Fish Farming	05T+00P
FRM 02	Pre-stocking Pond preparation and Management of different culture method	20T+30P
FRM 03	Post Stocking Pond management, Feed Management and Disease Management	20T+30P
FRM 04	Harvesting and marketing procedure, Documentation & Record Keeping.	17T+06P+19P
FRM 05	Safety, Hygiene and Sanitation Practices in Fish Farm	10T+11P
Total Credit Hours: 168 Hours		**72T+96P**

DETAIL COURSE-WISE THEORY & PRACTICAL SYLLABUS:

Sl. No.	Course Title	Learn Hours
FRM 01	**Introduction to Freshwater Fish Farming** - *Able to Identify the different freshwater species owing to commercial importance depending upon the culture method, basic requirements to set– up a commercial Fish farm, site selection, along with Structure, Scope and Importance of Freshwater Aquaculture in India.*	**05T**
Theory	Identification of different varieties of freshwater fishes (carps, catfish, murrels, freshwater prawn, etc.) suitable for culture in specific water bodies. Basic requirements like-space, feed intake and availability, transport, market demand etc. to set up a commercial fish farm along with its pre-requisite of profitable fish farming. Different scientific culture method and culture type of fish farming. Scope and Importance of Freshwater Aquaculture in India. Various structures of commercial fish farms in the state along with their future perspectives.	05T
FRM 02	**Pre-stocking Pond preparation and Management of different culture method** - Able to illustrate Pre-culture activities such as Pond preparation and management, seed collection, Stocking of fish seed, Different culture type (Monoculture or composite culture), method of culture (Extensive, semi intensive or intensive).	**20T+30P**
Theory	Preparation of pond for carp culture using appropriate methods for removal of unwanted organisms, filling of water to requisite depth, eradication of predatory and weed fishes, preparation of ponds for freshwater cat fish culture (i.e. magur – *Clarias batrachus*), crustaceans (Prawn), estimate dose of lime, manures and fertilizers during the pond preparation for different culture fish species, source of quality seed for the desired organisms, seed transportation	20T

	procedure with minimum stress, different culture type (Mono culture or Composite culture) and different culture method (Extensive, Semi intensive and Intensive), seed stocking procedure with due acclimatization, suitable water quality parameter before the stocking of fish seed, stocking density and ratio of fishes in different culture system and culture method for variety of fishes.	
Practical	Filling of water to requisite depth, eradication of predatory and weed fishes, Application of lime, manures and fertilizers during the pond preparation for different culture fish species, Identification of good quality seed, Perform seed transportation procedure with minimum stress, seed stocking procedure with due acclimatization, test suitable water quality parameter, perform the culture activities in the desired manner	30P
FRM 03	**Post Stocking Pond management, Feed Management and Disease Management** *- Able to illustrate Post stocking culture activities such as water quality management, Pond management, proper feeding and feed management based on species stocked and culture method, Feed preparation, Fertilization, Health and disease management of species stocked and culture method.*	**20T+30P**
Theory	Dosages of lime, manures, fertilizers to maintain suitable soil and water quality in the different culture method, Different micro and macro nutrients as essential Vitamins & minerals in fish feed, Feeding requirements in different fishes along with preparing low cost balanced Ration & feed formulation of fishes, various conventional feed as-De Oiled Rice Bran, Husk, Mustard oil cake, Ground nut oil cake, Fish meal etc. & non-conventional as- Neem Cake, Azolla etc. feed ingredients of fishes, Different forms of fish feed as-Mash, Pallet, Floating etc. feeding rate and methods feeding for maintain the good FCR, Period of culture in different fishes, category of infectious diseases such as-Viral, Bacterial, Fungal, protozoa and Parasitic etc. occurred in fish farming, diagnostic symptoms of infectious fish diseases and demonstrate various types of medication, Safety and security protocols to prevent infectious disease outbreak in fish farm, plankton and benthic fauna in water.	20T
Practical	Application of lime, manures, fertilizers to maintain suitable soil and water quality, test water quality parameters, Application of feed and feeding procedure, preparing low cost balanced Ration, Identification of feed ingredients and various conventional feed ingredients, Identification of Different forms of fish feed as-Mash, Pallet, Floating etc. Checking and Calculation of feeding rate, FCR, growth rate, Period of culture in different fishes, Identify the category of infectious diseases such as-Viral, Bacterial, Fungal, protozoa and Parasitic etc. occurred in fish farming, diagnostic symptoms of infectious fish diseases and demonstrate	30P

	various types of medication, Safety and security protocols to prevent infectious disease outbreak in fish farm, Identify the plankton and benthic fauna in water.	
FRM 04	**Harvesting and marketing procedure, Documentation & Record Keeping.** *- Able to illustrate the harvesting procedure, identifying the suitable markets, surveying species demand, reasonable price for sale, Documentation & Record Keeping*.	**17T+19P+06 Project**
Theory	Explain the harvestable size, harvesting time, harvesting net with appropriate mesh size of different fishes as well as different culture method, estimation of harvested fishes, partial harvesting procedure, market survey procedure, surveying species demand and marketing strategies, packaging and transportation procedure for the harvested fishes in good condition, preparation of bankable scheme or project on commercial fish farming along with financial Management of successful Fishery enterprise, how to maintain documents & Keep record in effective and efficient Fish farm management, record of harvest and sale proceeds.	17T
Practical	Decide on the harvesting time and ensure timely harvesting of fishes, Identify harvesting net with appropriate mesh size of different fishes, identify markets where harvested organisms can fetch reasonable price, estimation the approximate quantity to be harvested, maintain a record of harvest and sale proceeds, packaging and transportation procedure for the harvested fishes in good condition, preparation of bankable scheme or project on commercial fish farming, documents & record keeping, Market survey.	19P
Project	**Hands-on Training in Fish Farm Industry**	**06P**
	Hands-on Training: Hands-on Training in advanced procedures and techniques pertaining to fish production and management in commercially managed fish farm, Exposure visits to commercial fish farms, feed mills, for better hands on skill experience etc.	
FRM 05	**Safety, Hygiene and Sanitation Practices in Fish Farm** *- Illustrate the personal hygiene and safety, maintenance of health and hygiene of seed during transportation at various stages of growth and maturity, safety measures and upkeep of water bodies used in fish culture.*	**10T+11P**
Theory	Suitable measures for protection from natural calamities such as flood, storm, protect dyke from erosion or break, protection and prevent escape of the cultured fishes, various types of common predators and preying organisms in water bodies, suitable methods such as fencing to keep away predators in water bodies to protect fish culture, Structural and Operational Sanitation measures in for effective bio-security measures in fish farm, Effective systems and routines to ensure healthy and hygienic conditions during all stages of fish culture including transportation and marketing, Identify possibilities of bacterial (water borne, air borne,) and other contamination from human handling, Standard procedures to deal with accidents and emergency situations,	10T

	Systems of regular inspection of organisms for possible presence of parasites, pathogenic infections, any phenotypic disorder, spot, etc. which are usually the signs of ailments or disease outbreak, Different procedure to ensure all nets, utensils and vessels used are decontaminated and clean.	
Practical	Demonstrate Suitable measures for protection from natural calamities such as flood, storm, protect dyke from erosion or break, protection and prevent escape of the cultured fishes, Identify various types of common predators and preying organisms in water bodies, illustrate suitable methods such as fencing to keep away predators in water bodies to protect fish culture, Apply Structural and Operational Sanitation measures in for effective bio-security measures in fish farm, Demonstrate Effective systems and routines to ensure healthy and hygienic conditions during all stages of fish culture including transportation and marketing, Identify possibilities of bacterial (water borne, air borne,) and other contamination from human handling, illustrate Standard procedures to deal with accidents and emergency situations, Systems of regular inspection of organisms for possible presence of parasites, pathogenic infections, any phenotypic disorder, spot, etc. which are usually the signs of ailments or disease outbreak, Demonstrate Different procedure to ensure all nets, utensils and vessels used are decontaminated and clean.	11P
Total Credit Hours: 168 Hours		**72T+96P**

OUTCOMES

OUTCOMES TO BE ASSESSED	ASSESSMENT CRITERIA FOR THE OUTCOME
1. *Able to Identify the different freshwater species owing to commercial importance depending upon the culture method, basic requirements to set–up a commercial Fish farm, site selection, along with Structure, Scope and Importance of Freshwater Aquaculture in India.*	(1.1) Assessor will judge the trainee on his ability to identify different varieties of freshwater fishes (carps, catfish, murrels, freshwater prawn, etc.) suitable for culture in specific water bodies. (1.2) Trainee will be asked to explain basic requirements like- space, feed intake and availability, transport, market demand etc. to set up a commercial fish farm along with its pre-requisite of profitable fish farming. (1.3) Assessor will ask the trainee to illustrate about the Different scientific culture method and culture type of fish farming. (1.4) Assessor will ask the trainee to explain about the Scope and Importance of Freshwater Aquaculture in India. (1.4) Assessor will assess the assignment or report submitted by trainee to supervisor or competent of authority regarding various structure of commercial fish farms in the state along with their future perspectives. Assessor will assess if the trainee can illustrate the entire process followed in the fish farms through flow chart.

2. *Able to illustrate Pre-culture activities such as Pond preparation and management, seed collection, Stocking of fish seed, Different culture type (Monoculture or composite culture), method of culture (Extensive, semi intensive or intensive).*	(2.1) Trainee will be asked to explain preparation of pond for carp culture using appropriate methods for removal of unwanted organisms, filling of water to requisite depth, eradication of predatory and weed fishes. (2.2) Assessor will ask the trainee to explain the preparation of ponds for freshwater cat fish culture (i.e. magur – *Clarias batrachus*), crustaceans (Prawn). (2.3) Assessor will ask the trainee to estimate preparatory dose of lime, manures and fertilizers during the pond preparation for different culture fish species. (2.4) Trainee will be asked to find out the source of quality seed for the desired organisms, seed transportation procedure with minimum stress. (2.5) Trainee will be asked to identify the different culture type (Mono culture or Composite culture) and different culture method (Extensive, Semi intensive and Intensive). (2.6) Assessor will ask the trainee to explain the seed stocking procedure with due acclimatization. (2.7) Assessor will ask the trainee to enlist different suitable water quality parameter before the stocking of fish seed. (2.8). Assessor will ask the trainee about the stocking density and ratio of fishes in different culture system and culture method for variety of fishes. (2.9) Assessor will assess the trainee to illustrate the culture activities in the desired manner. (2.10) Assessor will assess if the trainee can demonstrate water test to determine the water quality parameters.
3. *Able to illustrate Post stocking culture activities such as water quality management, Pond management, proper feeding and feed management based on species stocked and culture method, Feed preparation, Fertilization, Health and disease management of species stocked and culture method.*	(3.1) Trainee will be asked to evaluate dosages of lime, manures, fertilizers to maintain suitable soil and water quality in the different culture method. (3.2) Trainee will be able to explain the suitable conditions to maintain soil & water quality in different culture methods. (3.3) Assessor will ask the trainee to identify various micro and macro nutrients as essential Vitamins & minerals in fish feed. (3.4) Assessor will ask the trainee to illustrate various feeding requirements in different fishes along with preparing low cost balanced Ration & feed formulation of fishes. (3.5) Assessor will ask the trainee to identify various conventional feed as-De Oiled Rice Bran, Husk, Mustard oil cake, Ground nut oil cake, Fish meal etc. & non-conventional feed as- Neem Cake, Azolla etc. feed ingredients of fishes. (3.6) Assessor will ask the trainee to explain various forms of fish feed as-Mash, Pallet, Floating etc. feeding rate and methods feeding for maintain the good FCR. (3.7) Trainee to explain FCR, growth rate and period of culture in different fishes. (3.8) Trainee will be able to demonstrate the feeding procedure to the

	fishes. (3.9) Trainee will be asked to enlist the period of culture in different fishes. (3.10) Trainee will be able to evaluate the feeding rate of different species of fishes. (3.11) Assessor will ask the trainee to explain various category of infectious diseases such as-Viral, Bacterial, Fungal, protozoa and Parasitic etc. occurred in fish farming. (3.12) Assessor will ask the trainee to identify various category of infectious diseases such as-Viral, Bacterial, Fungal, protozoa and Parasitic etc. occurred in fish farming. (3.13) Trainee will be asked to explain various diagnostic symptoms of infectious fish diseases and demonstrate various types of medication. (3.14) Assessor will examine whether the trainee can able to perform various safety and security protocols to prevent infectious disease outbreak in fish farm. (3.15) Assessor will examine whether the trainee can able to identify plankton and benthic fauna in water.
4. *Able to illustrate the harvesting procedure, identifying the suitable markets, surveying species demand, reasonable price for sale, Documentation & Record Keeping.*	(4.1) Assessor will ask the trainee to explain the harvestable size, harvesting time, harvesting net with appropriate mesh size of different fishes as well as different culture method. (4.2) Assessor will ask the trainee how to get the estimation of harvested fishes, partial harvesting procedure. (4.3) Assessor will ask the trainee to explain the market survey procedure, surveying species demand and marketing strategies. (4.4) Assessor will examine whether the trainee can demonstrate packaging and transportation procedure for the harvested fishes in good condition. (4.5) Trainee will be asked to prepare a bankable scheme or project on commercial fish farming along with financial Management of successful Fishery enterprise. (4.6) Trainee will be asked to explain, how to maintain documents & Keep record in effective and efficient Fish farm management. (4.7) Assessor will examine whether the trainee is able to maintain the record of harvest and sale proceeds.
5. I*llustrate the personal hygiene and safety, maintenance of health and hygiene of seed during transportation at various stages of growth and maturity, safety measures and upkeep of water bodies used in fish*	(5.1) Assessor will ask the trainee to explain suitable measures for protection from natural calamities such as flood, storm, protect dyke from erosion or break, protection and prevent escape of the cultured fishes. (5.2) Trainee will be asked to identify various types of common predators and preying organisms in water bodies, (5.3) Trainee to illustrate suitable methods such as fencing to keep away predators in water bodies to protect fish culture.

culture.	(5.4) Assessor will ask the trainee to delineate various Structural and Operational Sanitation measures in for effective bio-security measures in fish farm. (5.5) Assessor will ask the trainee to explain how to apply effective systems and routines to ensure healthy and hygienic conditions during all stages of fish culture including transportation and marketing. (5.6) Assessor will examine whether the trainee can able to identify possibilities of bacterial (water borne, air borne,) and other contamination from human handling. (5.7) Trainee will be asked to explain standard procedures to deal with accidents and emergency situations. (5.8) Trainee will be asked to explain various systems of regular inspection of organisms for possible presence of parasites, pathogenic infections, any phenotypic disorder, spot, etc. which are usually the signs of ailments or disease outbreak. (5.9) Trainee will be able to explain the different procedure to ensure all nets, utensils and vessels used are decontaminated and clean. (5.10) Trainee will be able to identify all the different types of nets, utensils and vessels used in fish farming and whether they are clean and decontaminated.