Syllabus of Certificate Course

in

ORNAMENTAL FISH FARMING

Duration : 1 Year

OBJCTIVES OF THE COURSE:

1) To inculcate importance of ornamental fish farming in relation with entrepreneurship development.
2) To give students knowledge about various techniques of ornamental fish breeding, rearing and its marketing to make them self-sustainable after graduation.
3) To teach techniques of construction of glass aquarium and its maintenance.
4) To teach students about fish food production and health related problems with ornamental fish.

SYLLABUS OF THE COURSE

ORNAMENTAL FISH FARMING

Course	Unit	Topic	Credit	L/Week
Term-I	**I**	**Introduction to Aquaculture and Ornamental Fishes Trading**	**I**	**04**
	II	**Introduction to Ornamental fishes**	**I**	
	III	**Engineering Aspect and construction of aquarium (I)**	**I**	
	IV	**Engineering Aspect and construction of aquarium (II)**	**I**	
Term -II	**I**	**Fish Breeding and rearing in Live Bearers**	**I**	**04**
	II	**Fish Breeding and rearing in Egg layers**	**I**	
	III	**Ornamental fish farming-Management Aspects**	**I**	
	IV	**Introduction to Aquarium plants and its propagation techniques**	**I**	
			Practical based on Term – I & II	**04**
Total				**12**

CERTIFICATE COURSE IN ORNAMENTAL FISH FARMING

Theory Syllabus of One Year Certificate Course

Program of the Course:

1. Course will be of 20 Credits, each credit will have 15 hours (45min.)
2. Out of 20 credits 8 credits will be assigned to field work/project/training
3. The candidate required to attend 75% lectures/periods.
4. The candidate must obtained 35% of the total marks in theory and practical/project work separate to pass the course.
5. Candidate will be offered English/Marathi as a medium of instructions/examination.
6. All 12th examination passed and first year appearing under graduate students are eligible for this course.

Term-I (UNIT-I to UNIT-IV) & Term-II (UNIT-I to UNIT-IV)

Term - I

UNIT-I Introduction to Aquaculture and Ornamental Fishes Trading (15 L)

- Basics of aquaculture-definition and scope. History of aquaculture: Present global and national scenario.
- World trade of ornamental fish and export potential. Different varieties of exotic and indigenous fishes.
- Ornamental fisheries-e new dimensions in aquaculture entrepreneurship

UNIT- II Introduction to Ornamental fishes (15 L)

- Introduction to aquarium and aquarium accessories.
- Basic knowledge on profile of ornamental fishes in world
- Basic knowledge and profile of some selected indigenous Indian ornamental

UNIT-III Engineering Aspect and construction of aquarium (I) (15L)

- Design and construction of public fresh water and marine aquaria and oceanarium.
- Aerators, filters and lighting.
- Bio filters in aquarium.

UNIT IV Engineering Aspect and construction of aquarium (II) (15 L)

- Construction, settings and maintenance of aquarium
- Construction of ornamental fish unit
- Engineering aspect in Ornamental Fish Farming

Term II

UNIT-I Fish Breeding and rearing in Live Bearers (15L)

- Breeding of ornamental fish with reference to live bearer species.
- Breeding of Guppies, Mollies, Swordtail fish and Platy fish
- Introduction hatchery management system for live bearers
- Nursery management of live bearers
- Rearing of live bearers

UNIT- II Fish Breeding and rearing in Egg layers

- Breeding of ornamental fish with reference to selected egg layer species.
- Introduction to Breeding of Angel fish, Zebra fish and Neon tetra
- Introduction hatchery management system for egg layers
- Nursery management of egg layers
- Special emphasis on Breeding of Gold fish.

UNIT-III Ornamental fish farming-Management Aspects (15L)

- Ornamental Fish-diseases and their management
- Live Food culture for tropical ornamental fish
- Feeding for breeding and maintenance of ornamental fish.
- Health management in Ornamental Fish Farming.

UNIT-IV Introduction to Aquarium plants and its propagation techniques (15L)

- Introduction to Aquarium plants and their export potential.
- Profiles of some selected aquarium plants. Morphology, multiplication of aquarium plants – different methods. Indigenous ornamental plants of Western Ghats.
- Aquarium plant propagation.
- Management of ornamental aquatic plants and its trading

PRACTICAL

Practical: Term- I
1) Identification of common live bearer ornamental fishes: - Guppy, Molly, Platy, Sword Tail,
2) Identification of common Egg layer ornamental fishes: - Angel, Neon tetra
3) Identification of common Egg layer ornamental fishes: Discus and Siamese fighter
4) Identification of common Egg layer ornamental fishes: Gold fish, Koi Carp,
5) Identification of common Egg layer ornamental fishes: Danio- Zebra, and Flower Horn.
6) Fabrication of all-glass aquarium demonstration and individual performance. (03 practical)
Term - II
1) Setting-up and maintenance of aquarium
2) Introduction to Aquarium accessories and equipment's.
3) Conditioning and packing of ornamental fishes.
4) Preparation of ornamental fish feed.
5) Setting-up of breeding tank for live bearers (02 practical)
6) Setting-up of breeding tank of goldfish (02 practical)
7) Identification of ornamental fish diseases and prophylactic measures.
8) Identification of aquarium plants (02 practical)

MODALITY OF ASSESSMENT:

Term End Theory Assessment –100% **100 marks**

1. Duration - These examinations shall be of three hours duration.
2. Theory question paper pattern:-
   a) There shall be **five** questions each of **20** marks. On each unit there will be one question & fifth one will be based on all the four units.
   b) All questions shall be compulsory with internal choice within the questions. Each question will be of **40** marks with options.
   c) Questions may be sub divided into sub questions a, b, c & d only, each carrying **10**marks **OR** a, b, c, d, e , f and g only each carrying **four** marks and the allocation of marks depends on the weightage of the topic.

Practical Examination Pattern: There will not be any external examination/ evaluation for practical.

Term end practical examination:-

Sl. No.	Particulars	Marks
1	Laboratorywork	80
2	Report	10
3	Viva voce	10

ANNEXURE -I

Suggested Topics For Individual Project

1. Feasibility report of the maintenance of aquarium fishes in high profile residences.
2. Probability report of maintenance of a culture of Chaetoceros & Artemia by the fish farmers.
4. Project report for the establishment of small / medium / large ornamental fish farming unit
5. Feasibility report of various packaging materials in freezing / canning industry.
6. Feasibility report for establishing an aquarium shop.
7. Feasibility report for establishing a fish feed industry.
8. Setting up of marine aquarium with various accessories and its costing.
9. Finding herbal medicines for ornamental fish diseases
10. Propagation of aquarium plants and tissue culturing methods

Some photographs of the course