CERTIFICATE COURSE ON ORNAMENTAL FISH BREEDING & CULTURE

COURSE PREAMBLE

World market offers a huge potential for aquaculture development, the demand for fishes are increasing day by day since more and more entrepreneurs are attracted to this field especially to the wholesale and retail markets but the production is not copping with the need. This course helps to overcome the problems of fish production as this course gives an idea about breeding, rearing and management of certain fish species which are economically important through theory and practical classes.

COURSE OBJECTIVE

This course mainly focuses on induced breeding of many types of economically important species that will help the students to become self-employed. India has great potential in aquaculture, offering many job opportunities in government sector and private sectors. The ecological conditions are conducive for fish breeding and culture in Kuttanad which gives an added advantage for the people residing in this area. This course helps the student to

- Develop a real interest in fish breeding and culture methods
- Learn the theoretical and practical aspects of Ornamental fish breeding and culture techniques
- Acquire basic skills for setting up an Ornamental Fish Hatchery
- Develop as an entrepreneur in Ornamental fishes.

COURSE OUTCOME

This 40-hour course gives a clear idea about breeding, rearing and management of economically important fish species and the students will get a chance to do the most modern techniques of induced breeding of many types of fishes during practical sessions.

COURSE STRUCTURE

Theory	20 hours
Practical	15 hours
Group Project	5 hours

EVALUATION OF THE COURSE

There will be an **Internal Evaluation (IE)** and **External Evaluation (EE)** for assessing the progress of the course and also for issuing a course certificate. The ratio between internal and external evaluations is **2:2**. In Internal Evaluation, the following factors will be considered in the ratio 2:4:4

- Attendance (minimum of 75% is mandatory for appearing the external evaluation)
- Involvement in practical
- Involvement in Group Project& Viva

For External Evaluation, there will be a written examination based on the syllabus. Minimum of 40% mark is required for passing the External Evaluation.

PATTERN OF EXAMINATIONS

External Evaluation (theory): **25 marks**

Internal Evaluation : **25 marks**; it is divided into

1. **Attendance** : 5 marks

% of attendance	Marks
90% and above	5
85 – 89%	4
80 – 84%	3
76 - 79	2
75	1

2. **Involvement in practical** : 10 Marks
3. **Project work and Viva-voce** : 10 marks

For the final evaluation of the course, both the Internal Evaluation and External Evaluations shall be converted into Direct Grading system based on 5-point scale as given below.

Grade Range	Performance	Letter Grade
3.5 to 4.00	Excellent	A
2.5 to 3.49	Very Good	B
1.5 to 2.49	Good	C
0.5 to 1.49	Average	D

0.00 to 0.49	Poor	E

The Course Certificate will be issued to those candidates only who have scored a minimum Grade of D or above.

- **Dr. Tessa Thomas**, Assistant Professor in Zoology (Course Co-ordinator)

Members:

1. **Dr. Jubin Antony** (IQAC Co-ordinator)
2. **Dr. Shibu George** (HOD, Zoology)
3. **Mr. Sonnel Noronha** (Proprietor, Pulimugham Aqua Farms & Hatcheries)

COURSE CONTENTS

THEORY (20 hours)

Module 1.

INTRODUCTION TO AQUACULTURE (5 HOURS)

- Setting up of fish Aquarium and bio filtration systems
- Quarantine techniques (fish conditioning protocol)
- Brood stock development
- Live feed culture (paramecium culture, moina culture, infusoria)
- Artificial feed preparations, water quality parameters, soil quality parameters.

Module 2.

INDUCED BREEDING TECHNIQUES OF ORNAMENTAL FISHES (10 HOURS)

- Induced breeding techniques of some fishes like
    - ➢ Oviparous fishes
        - Egg Scatters (gold fish, Koi Carps),
        - Bubble Nest builders (Gourami, Fighter fish)
    - ➢ Cichlids (Angel fish, Oscar)
    - ➢ Live bearers (Guppy, Molly, platy)

Module 3.

REARING/ CULTURING OF FISHES AND MANAGEMENT (5

HOURS)

- Pond preparation for culturing
- Stocking of fishes
- Diseases of ornamental fishes and their treatments
- Harvesting techniques; packing, transportation and Marketing.

PRACTICAL (15 HOURS)

- Setting up of fish Aquarium
- Conditioning of fishes before stocking
- Induced breeding of ornamental fishes

PROJECT WORK (5 HOURS)

All students shall do a project individually or as a group to fulfil the Internal Evaluation (EE) process. For evaluating the project, a Viva will be conducted.

COURSE FEES

For meeting the expense of the course, **Rs. 750/-** (Seven hundred and fifty only) has to be remitted by General Candidates. But the Course is free for SC/ST candidates.

ELIGIBILITY& ADMISSION

Any person with a genuine interest in fish breeding techniques can join this course. An academic qualification of Plus Two or above is desirable. For effective running of the course, the student strength is limited to 40. Admission will be based on the marks of Plus two. Priority will be given to those having higher academic qualifications.

REFERENCES:

- R. W. Rottmann, J. V. Shireman and F. A. Chapman. Introduction to Hormone-Induced Spawning of Fish.1991.SRAC Publication No. 421.
- Meenakshi Jindal, N. K. Yadava, R. K. Gupta. Freshwater Ornamental Fishes. 2010. Mangakam Publications, Delhi.
- S. M.B. Rahman, W. Sabbir, S. Biswas. Imduced Breeding, Embryonic and Larval Development of Koi carp (*Cyprinus carpio*) in Khulna, Bengaladesh. 2012, Basrah University.