Fish Breeding and Larviculture

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Fish Breeding and Larviculture	2	0	0	2	Class XII	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To give first-hand training on various aspects of brood stock maintenance of carps and air breathing fishes.
- To understand the breeding techniques for carps and air breathing fishes.
- To understand the larviculture techniques for carps.
- To gain experience on the larviculture techniques of air breathing fishes.
- To gather knowledge in the management of optimum water quality for larviculture.
- To gather knowledge on the nutritional requirements of the cultivable species.
- To gain knowledge on the impact of live food in larviculture.

Learning Outcomes

By the end of the course, the students will be able to:

- Produce seeds of carps and air breathing fishes.
- Start the Fish hatchery business.
- Start fish-food production.
- Initiate entrepreneurship in fish seeds production.

Skill development and job opportunities

After completion of this course students may be

- Employed in various aquaculture related business including prawn and fish farms.
- Fully equipped to start own entrepreneurships in fish farming.

SYLLABUS:

Practical

Unit I: Breeding of Economically Important Fishes **20 Hours**

Breeding of various fishes in the captivity and production of quality fish seeds for aquaculture.

Exercises:

1. Management of brood stock units and breeding of carps.

2. Maintenance of brood stock units and breeding of air breathing fishes.

3. Estimation of major water quality parameters *viz*., temperature, pH, dissolved oxygen, conductivity etc. in the fish breeding units.

Unit II: Culture of Important Live Food Organisms **15 Hours**

Culture of various live food organisms using organic manures and feeding of different fish larvae produced.

Exercises:

1. Culture of live food organisms *viz*., rotifers, cladocerans, copepods, chironomid larva etc. using organic manures (like cattle manure, poultry wastes and mustard oil-cake).

2. Evaluation of major water quality parameters *viz*., temperature, pH, dissolved oxygen, ammonia etc. in the live food culture units.

3. The enrichment of live food organisms (with vitamin C, DHA, EPA etc.) to enhance the nutritional value of the live food for fish larvae.

Unit II: Larviculture **25 Hours**

Culture of larvae of carps and air breathing fishes and production of healthy seeds for stocking ponds.

Exercises:

1. Culture of fish larvae in the static water/ Recirculating Aquaculture Systems (RAS).

2. Measurement of water quality parameters (*viz*., temperature, pH, dissolved oxygen, ammonia etc.) in the larvae culture unit regularly.

3. Feeding of fish larvae with live food thrice daily.

4. The study of morphological and physiological changes in the larvae during ontogenic development.

5. Visit to a fish farm.

Recommended Readings:

- AOAC, Association of Official Analytical Chemists. 2017. Official Methods of Analysis. Washington, DC: Association of Official Analytical Chemists Inc.

- APHA, American Public Health Association. 2017. Standard Methods for the Examination of Water and Wastewater. 23rd ed. Washington DC, USA: American Public Health Association, American Water Works Association, Water Environment Federation.
- Chakrabarti, R. and Sharma, J. G. 2008. Aquahouse. New Dimension of Sustainable Aquaculture. DIPAS, Indian Council of Agricultural Research, New Delhi, India.

- Holt, G. J. 2021. Larval Fish Nutrition. Willey-Blackwell, UK.

- ICAR, Indian Council of Agricultural Research. 2013. Handbook of Fisheries and Aquaculture. Directorate of Knowledge Management in Agriculture, Indian Council of Agricultural Research, New Delhi, India.

- Pillay, T. V. R. 2005. Aquaculture. Principles and Practices. Blackwell Publishing, New Delhi, India.

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi