KU6SECZOO103: ORNAMENTAL FISH FARMING AND AQUARIUM MANAGEMENT

Semester	Course Type	Course Level	Course Code		Credits	Total Hours
VI	SEC	100	KU6SECZOO103		3	45
Learning Approach (Hours/ Week)			Marks Distribution			Duration of ESE (Hours)
Lecture/Tutorial	Practical		CE	ESE	Total	
3	-		25	50	75	1.5

Course Description

This course aims to introduce students to the wonderful world of ornamental fishes and fish keeping. Ornamental fish farming can also be a source of income and thus an alternate method of livelihood for rural populace. This course will provide the required training to keep fishes in an aquarium and teach to maintain aquaria properly. The course also aims to provide students with knowledge about different types of fish feed and will provide details about ornamental fish diseases and treatment

Course Pre-requisite:

Course Outcomes:

	Expected Outcome	**Learning Domains**
CO1	Understand different ornamental fish culture methods	U
CO2	Learn about aquarium management and apply the knowledge to keep fishes	An
CO3	Learn about different fish feed types	U
CO4	Evaluate the challenges related to ornamental fish related business	An
CO5	Prepare a proposal for ornamental fish related business and become adept in funding avenues.	A

****Remember (R), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C)***

Mapping of Course Outcomes to PSOs

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	0	0	1	2
CO2	1	1	1	1	2
CO3	0	1	0	1	0
CO4	1	0	1	0	2
CO5	1	0	0	0	0

COURSE CONTENTS

Module I: Ornamental Fish Culture **(9 hours)**

Unit I:

1.1 Introduction to Ornamental fish culture.

1.2 Status of ornamental fish culture (Indian scenario and International scenario).

1.3 Prospects of ornamental fish culture.

Unit II:

1.4 Ornamental fish keeping systems.

1.5 Differences between freshwater and marine aquaria.

Unit III:

1.6 Ornamental fish culture as a hobby.

Module II: Ornamental Fish and plant species diversity **(9 hours)**

Unit I:

2.1 Ornamental fish characteristics.

2.2 Indigenous and Exotic ornamental fishes

2.3 Freshwater and marine ornamental fishes.

Unit II:

2.4 Classification of ornamental fishes.

2.5 Live bearers (with any two suitable examples).

2.6 Egg layers (with any two suitable examples).

2.7 Classification of egg layer fishes.

Unit III: 2.8 Commercially important ornamental fishes.
Module III: Aquarium Management **(9 hours** **Unit I:** 3.1 Different types of aquaria 3.2 Water quality management 3.3 Stock management 3.4 Design and construction of aquarium tanks. 3.5 Decoration of aquarium. 3.6 Aeration and Heating. 3.7 Types of filtration systems. **Unit II:** 3.8 Feed types and feed management. 3.9 Live feed development. 3.10 Feed preparation. **Unit III:** 3.11 Common aquarium fish diseases and management
Module IV: Ornamental fish trade **(9 hours)** **Unit I:** 4.1 International and Indian Scenario. 4.2 Ornamental fish trade in Kerala. 4.3 Economic analysis of ornamental fish breeding and rearing. 4.4 Economics of ornamental fish retail outlets. **Unit II:** 4.5 Governmental agencies supporting ornamental fish trade/business. **Unit III:** 4.6 Government assisted financial schemes for starting ornamental fish business

Teacher Specific Module	**9 hours**
Directions: **20 percent of the content can be modified by the course teacher** *Suggestions:* 1.Ornamental fish culture and trade as a profession. 2.Common aquarium plant species.	

Core Compulsory Readings

1. Sinha, A., & Pandey, P. K. (2023). *Breeding and Culture of Freshwater Ornamental Fish*. CRC Press.

Core Suggested Readings

1. Jayasree, Tharadevi and Arumugam, 2015. Home aquarium and ornamental fish culture.
2. Anikuttan, K. K., Nazar, A. K. A., Jayakumar, R., Johnson, B., Tamilmani, G., Sakthivel, M., Ramesh Kumar P & Sankar, M. (2019). Handbook on Marine Ornamental Fish Seed Production.

Assessment Rubrics:

Evaluation Type		**Marks**
• End Semester Evaluation		50
• Continuous Evaluation		25
Continuous Evaluation		
Theory	Method of Assessment	Marks
a)	Test paper I	5
b)	Test paper II	5
c)	Viva-Voce	5
d)	Assignment	5
e)	Seminar	5
		Total – 25 marks

Employability for the Course / Programme

- Entrepreneurship in the field of ornamental fish farming and trade.
- Aquarium fish shops.
- Technicians in aquaculture farms.
- Indigenous ornamental fish breeding, rearing technology development and technology transfer.