



# **HAJEE KARUTHA ROWTHER HOWDIA COLLEGE**

(An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai.)

**Uthamapalayam, Theni District. Pin Code: 625 533.**

## **DEPARTMENT OF ZOOLOGY**

**PART – IV PG – NME ZOOLOGY**

**SYLLABUS**

**Choice Based Credit System – CBCS**

**(As per TANSICHE/MKU Guidelines)**

**(Academic Year 2020-2021 onwards)**

## Details of Course Category, Code, Credits & Title

Course Category	Course Code	Course Title	Hrs	CIAE	TEE	Max. Marks	Credits
<b>Semester - III</b>							
<b>Part - IV</b>							
NME	20PZYN31	Aquarium Science	3	25	75	100	3

Course Code	Course Title	Category	Total Hours	Credits
20PZYN31	Aquarium Science	NME	45	3

Nature of Course	
Knowledge Oriented	
Skill Oriented	
Employability Oriented	✓
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	✓
Global	

## Preamble

Students will get entrepreneurial practices through aquarium keeping and the opportunity for employment purpose.

## Syllabus

- UNIT I** 9 Hours  
**Ornamental fish biodiversity of India:** History, live bearers and egg layers, common ornamental fishes of India (Fresh water and marine); scope for entrepreneurs in ornamental fish trade.
- UNIT II** 9 Hours  
**Construction and maintenance of aquarium:** Material required, construction, Glass cover, Hood, Aquarium stand, Installation, setting of Aquarium, Planting of aquarium, tank conditioning and stocking, introduction of fish, Decoration, Aeration, Acclimatization, and Maintenance. Aquarium accessories: Air pumps, filters, functions of gravel bed, foam filters, power filters, lighting, aquarium heaters.
- UNIT III** 9 Hours  
**Feed and feeding of ornamental fish:** Nutritional requirements, types of fish feed, available feeds in market.
- UNIT IV** 9 Hours  
**Sexual dimorphism:** Sexual dimorphism in live bearers and egg layers; Live bearers- Sword tails, white sail fin molly; red platy fish; guppy; Egg layers- Cichlids; Cyprinids; Characins (tetras); Anabantoids (Gourami) loaches and catfish.
- UNIT V** 9 Hours  
**Breeding techniques of aquarium fish:** Sexing, selecting the parent; conditioning the fish to breed; various types of breeding, larval rearing and transportation. Disease of ornamental fish and their cure: Bacterial, fungal, protozoan, crustacean and viral disease (any one).

## Text Books

Jameson J.D & R. Santhanam, *Manual of Ornamental fishes and forming technologies*, Fisheries college & Research Institute, Tamil Nadu, 1996.

## Reference Books

Felix S. Sunderraj and S. Thilakar, *Manual of tropical fish diseases diagnosis*, Tamil Nadu Veterinary & Animal Sciences University, Chennai.

Ramanathan. N and T. Francis, *Manual of Breeding & Larval rearing of Cultivable fishes*, Tamil Nadu Veterinary & Animal Sciences University, Chennai.

Sampathkumar J.S. & Sundararaj. V, *Manual of Aquatic Engineering*, Tamil Nadu Veterinary & Animal Sciences University, Chennai.

## Pedagogy

Chalk & Talk, E-Resources, Group Discussion

## Teaching aids

LCD Projector, Chart models, Interactive White Board

## Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
<b>UNIT - I</b>			
1.1	Ornamental fish biodiversity of India-	3	Discussion
1.2	History, live bearers and egg layers, common ornamental fishes of India (Fresh water and marine);	3	Chalk & Talk
1.3	Scope for entrepreneurs in ornamental fish trade.	3	E-Resources
<b>UNIT - II</b>			
2.1	Construction and maintenance of aquarium: Material required, construction, Glass cover, Hood,	2	Discussion
2.2	Aquarium stand, Installation, setting of Aquarium, Planting of aquarium, tank conditioning and stocking, introduction of fish,	3	Chalk & Talk
2.3	Decoration, Aeration, Acclimatization, Maintenance.	2	E-Resources

2.4	Aquarium accessories: Air pumps, filters, functions of gravel bed, foam filters, power filters, lighting, aquarium heaters.	2	Chalk & Talk
<b>UNIT - III</b>			
3.1	Feed and feeding of ornamental fish	3	Discussion
3.2	Nutritional requirements,	3	Chalk & Talk
3.3	Types of fish feed, available feeds in market.	3	E-Resources
<b>UNIT - IV</b>			
4.1	Sexual dimorphism in live bearers and egg layers; Live bearers- Sword tails, white sail fin molly; red platy fish; guppy.	4	Chalk & Talk
4.2	Egg layers - Cichlids; Cyprinids; Characins (tetras); Anabantoids (Gourami) loaches and catfish.	5	E-Resources
<b>UNIT - V</b>			
5.1	Breeding techniques of aquarium fish- Sexing, selecting the parent	2	Discussion
5.2	conditioning the fish to breed; various types of breeding,	2	Chalk & Talk
5.3	Larval rearing and transportation.	1	E-Resources
5.4	Disease of ornamental fish and their cure: Bacterial, fungal, and viral disease.	2	Discussion
5.5	Disease of protozoan, crustacean- viral disease.	2	Chalk & Talk
<b>Total</b>		<b>45</b>	

**Course Designer**

**Ms. Athirasukumaran**

Assistant Professor of Zoology