

DEPARTMENT OF ZOOLOGY

C M S COLLEGE
KOTTAYAM

Applied Biology is the application of our knowledge of Biology to earn.

The department of Zoology is offering a value added programme on "Applied biology for sustainable livelihood for Undergraduate students. The programme comprises of three stages :

-Certificate course in Applied biology for sustainable livelihood

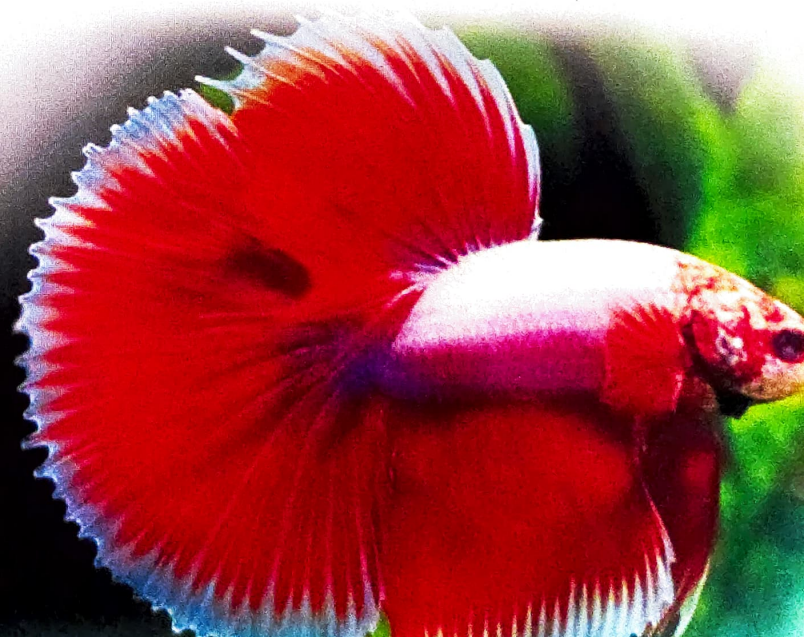
-Diploma in Applied biology for sustainable livelihood and

-Advanced Diploma in Medical Coding - Human Anatomy & Physiology-

Sixth semester students can opt Ornamental fish culture as a subject for Applied biology for sustainable livelihood stage III.

Applied biology for sustainable livelihood III

value added Programme



Course	Details				
Code	ZYA181603				
Title	Applied biology for sustainable livelihood-III				
Degree	Undergraduate				
Branch(s)	Zoology				
Year/Semester	III/VI				
Type	Value added Programme				
Credits	2	Hrs/Week	2	Total hours	36

<i>Objectives</i>	
1	To impart interest in fish farming with special reference to ornamental fish culture
2	Embolden the students to acquire additional income through aquaculture and promote entrepreneurship

CO No.	<i>Expected Course Outcomes</i> Upon completion of this course, the students will be able to:	Cognitive Level	PSO No.
1	Understanding the basic concepts of ornamental fish culture and its future possibility	U	4
2	Design and management of an aquarium	Ap	4
3	Construct an ornamental fish culture unit for self employment	C	4
4	Devise and formulate artificial and live feeds, breeding strategies and packing of fishes	C	4
*PSO-Program Specific outcome; CO-Course Outcome; Cognitive Level: R-Remember; U-Understanding; Ap-Apply; An-Analyze; E-Evaluate; C-Create			

<i>Teaching and Evaluation Methods</i>	
Teaching Methodology	Contact classes, ICT enabled teaching, Hands-on training Group discussions, Case studies, Field visit, workshops, Training in reputed institution in the concerned area
Evaluation Methodology	Written examination based on the syllabus, Practical and viva

Module	Course Description	Hrs	CO No.
1.0	Basic techniques in ornamental fish culture and breeding	18	1-4
1.1	Introduction and scope of ornamental fish culture	1	1
1.2	Culture practices of ornamental fishes	2	
1.3	Construction of aquarium tank, aquarium accessories, Setting up of aquarium.	2	1
1.4	Common ornamental fishes, Identification of ornamental fishes	2	2
1.5	Fish nutrition, Feed technology	3	3
1.6	Fish diseases and methods of treatment	3	1
1.7	Proximate composition analysis of feed ingredients and foods	1	4
2.0	Practical	18	
2.1	Setting up of aquarium	2	
2.2	Aquarium management and maintenance	4	
2.3	Preparation of artificial feeds using locally available feed ingredients, Culture of live food organism, Infusoria culture	2	
2.4	Breeding of ornamental fishes, hybridization	4	
2.5	Fabrication of glass aquaria	1	
2.6	Conditioning and Packing of ornamental fishes	1	
2.7	Visit to aqua farms	2	

Reference

1. MPEDA A handbook of Aquafarming- ornamental fishes, MPEDA Cochin.
2. Anshuman D. Dholakia (2009), Ornamental Fish Culture and Aquarium Management, Daya Publication House, New Delhi
3. Pradip V Jabde (1993)Text Book of Applied Zoology: Vermiculture, Apiculture, Sericulture, Lac Culture Agricultural Pests and their Controls, Discovery Publishing House, New Delhi
4. Applied Zoology, Study material published by Zoological Society of Kerala, CMS College campus
5. Pillai T V R. And Kutty M.N. (2005) Aquaculture, Principles and practices, Wiley-Blackwell.
6. K.Vijayakumaran Nair and K.G Manju (2013). Ornamental fish keeping. Academia publication.
7. A. Biju Kumar and Harisankar J Alappat..A Complete Guide to Aquarium Keeping. Low Price Publications
8. Jay F. Hemdal (2003).Aquarium Fish Breeding . Barron's publication
9. C.S Tharadevi, K.V. Jayasree, N. Arumugam, (2015).Home Aquarium and Ornamental Fish Culture. Saras publication.
10. V. K Dey (1997). Hand Book on Aquafarming: Ornamental fishes. Manual. MPEDA, Cochin
11. Eprints@cmfri , Open access institutional repository

PRN	NAME	20/02/20 4pm - 5pm	29/02/20 10am - 4pm	2/3/2020 9am - 11pm	3/3/2020 9am - 12pm
02	AMALU MADHU	Amal	Amal	Amal	Amal
04	Arroop P.V	Arroop	Arroop	Arroop	Arroop
07	Belgi Anna George	Belgi	Belgi	Belgi	Belgi
08	Devika S Nair	Devika	Devika	Devika	Devika
09	Gopika	Gopika	Gopika	Gopika	Gopika
12	KRISHNENDU.KS	Krish	Krish	Krish	Krish
13	PREETHI PAINU	P	P	P	P
15	Sandha C Suresh	Sandha	Sandha	Sandha	Sandha
17	Shebinol Sabu	Shebinol	Shebinol	Shebinol	Shebinol
18	Swathy Kiran	Swathy	Swathy	Swathy	Swathy
19	TOM JOSEPH	Tom	Tom	Tom	Tom
22	ALWIN SYMON	Alwin	Alwin	Alwin	Alwin
23	Arijana Mol PB	Arijana	Arijana	Arijana	Arijana
24	Arjitha Vijayan	Arjitha	Arjitha	Arjitha	Arjitha
28	DANI P.BJU	Dani	Dani	Dani	Dani
29	Fazrin Shaji	Fazrin	Fazrin	Fazrin	Fazrin
33	GRASHYA LEE SABU	Grashya	Grashya	Grashya	Grashya
34	Haritha Hari	Haritha	Haritha	Haritha	Haritha
35	Kewin Philip Sabu	Kewin	Kewin	Kewin	Kewin
36	Lovin Conner Mathew	Lovin	Lovin	Lovin	Lovin
37	Manesh P.R	Manesh	Manesh	Manesh	Manesh
40	Rehan Mathew	Rehan	Rehan	Rehan	Rehan
41	Roshan Kuriaakose Koshy	Roshan	Roshan	Roshan	Roshan
42	Sandra V. Suresh	Sandra	Sandra	Sandra	Sandra
44	SAYU.S	Sayu	Sayu	Sayu	Sayu
45	SHIBINT PANICKER	Shibint	Shibint	Shibint	Shibint
47	Suncy Varghese	Suncy	Suncy	Suncy	Suncy

UPRN	NAME	18/11/19 10 AM - 4 PM	19/11/19 10 AM - 4 PM	20/11/19 10 AM - 4 PM	23/11/19 8.30 am - 9.30 pm	5/12/19 8.30 am - 9.30 pm	12/12/19 4 pm - 5 pm
1 171109202	AMALU MADHU	Amal	Amal	Amal	Amal	Amal	Amal
2 17110904	ANOO P V	Anoop	Anoop	Anoop	Anoop	Anoop	Amal
3 17110907	BION ANNA GEORGE	Bigi	Bigi	Bigi	Bigi	Bigi	Anoop
4 17110908	DEVIKA S NAIR	Devi	Devi	Devi	Devi	Devi	Bigi
5 171109209	GIPIKA P G	Gopi	Gopi	Gopi	Gopi	Gopi	Devi
6 171109212	KRISHNENDU KS	Krish	Krish	Krish	Krish	Krish	Gopi
7 171109213	PREETHI E PRINCIL	Preethi	Preethi	Preethi	Preethi	Preethi	Krish
8 171109215	SANDRA C SURESH	Sandra	Sandra	Sandra	Sandra	Sandra	Preethi
9 171109217	SHEBIMOL SABU	Shebi	Shebi	Shebi	Shebi	Shebi	Sandra
10 171109218	SWATHY KIRAN	Swathy	Swathy	Swathy	Swathy	Swathy	Shebi
11 17110919	TOM JOSEPH	Tom	Tom	Tom	Tom	Tom	Swathy
12 171109222	ALWIN SIMON	Alwin	Alwin	Alwin	Alwin	Alwin	Tom
13 171109283	ANJANAMOL PB	Anjan	Anjan	Anjan	Anjan	Anjan	Alwin
14 171109224	ANJITHA VJAYAN	Anjitha	Anjitha	Anjitha	Anjitha	Anjitha	Anjan
15 171109220	DANI P BLU	Dani	Dani	Dani	Dani	Dani	Anjitha
16 171109229	FARZIN SHAJI	Farzin	Farzin	Farzin	Farzin	Farzin	Dani
17 171109233	GRASHYA LEE SABU	Grashya	Grashya	Grashya	Grashya	Grashya	Farzin
18 171109234	HARITHA NARI	Haritha	Haritha	Haritha	Haritha	Haritha	Grashya
19 171109235	KEVIN PHILIP SABU	Kevin	Kevin	Kevin	Kevin	Kevin	Haritha
20 171109236	LORIN OMMEN MATHEW	Lorin	Lorin	Lorin	Lorin	Lorin	Kevin
21 171109237	MANEESH PR	Maneesh	Maneesh	Maneesh	Maneesh	Maneesh	Lorin
22 171109238	RENAN MATHEW	Renan	Renan	Renan	Renan	Renan	Maneesh
23 171109241	ROSHAN KURIKOSSE KOSNY	Rohan	Rohan	Rohan	Rohan	Rohan	Renan
24 171109242	SANDRA V SURESH	Sandra	Sandra	Sandra	Sandra	Sandra	Rohan
25 171109244	SAYUJ S	Sayuj	Sayuj	Sayuj	Sayuj	Sayuj	Sandra
26 171109245	SHIBIN T PANICKER	Shibin	Shibin	Shibin	Shibin	Shibin	Sayuj
27 171109247	SUNNY VARMA	Sunny	Sunny	Sunny	Sunny	Sunny	Shibin

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PRN	NAME	18/12/19 9 am - 10 am	15/01/20 4 pm - 5 pm	23/01/20 4 pm - 5 pm	24/01/20 9 am - 10 am	31/01/20 8:30 am - 9:30 am	3/02/20 9 am - 10 am	7/02/20 4 pm - 5 pm
03	AMALU MADHU	Amal	Amal	Amal	Amal	Amal	Amal	Amal
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07	Reji Annageorge	Reji	Reji	Reji	Reji	Reji	Reji	Reji
08	Sevika S Nair	Sevika	Sevika	Sevika	Sevika	Sevika	Sevika	Sevika
09	GOPIKA	Gopika	Gopika	Gopika	Gopika	Gopika	Gopika	Gopika
12	KRISHNENDU .K.S	Krish	Krish	Krish	Krish	Krish	Krish	Krish
13	PREETHI PRINCE	Preethi	Preethi	Preethi	Preethi	Preethi	Preethi	Preethi
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35	Kevin Philip Sabu	Kevin	Kevin	Kevin	Kevin	Kevin	Kevin	Kevin
36	Lavin Oommen Mathew	Lavin	Lavin	Lavin	Lavin	Lavin	Lavin	Lavin
37	Maneesh P.R	Maneesh	Maneesh	Maneesh	Maneesh	Maneesh	Maneesh	Maneesh
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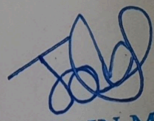
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The students were given hands on training for a wide range of aspects such as, construction of aquarium tanks, maintenance of aquarium, breeding and culture of common ornamental fishes, cultivation of ornamental aquatic plants, fish feed formulation and preparation, culture of live food, water quality management and disease management. Audio visual aids were used for providing up to date information regarding the advancement of ornamental fish culture in the country or elsewhere to broaden the outlook of the students.

Result

The course provided an opportunity for 26 students to familiarize with the different aspects of ornamental fish culture. The students became fully confident to earn a substantial income through ornamental fish culture.


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VALUE ADDED COURSE

ORNAMENTAL FISHCULTURE & AQUARIUM MANAGEMENT

Dr. Pushpa Geetha S, Assistant Professor, Department of Zoology, CMS College Kottayam

Introduction


Ornamental fish culture is the culture of attractive, colourful fishes of various characteristics, which are reared in a confined aquatic system. The international market for ornamental fish offers a multimillion dollar opportunity. But India's share of ornamental fish export is meagre, although the country has immense potential in terms of water resources, agroclimatic conditions and ornamental fish resources. Where as in Kerala, aquarium keeping has been growing at a steady pace in recent years, and hence there is a growing demand for ornamental fishes in the domestic market. But, the main supply of aquarium fish to our state comes from outside the state. Inorder to meet the local demand, we should promote the commercial production of ornamental fishes. Moreover, ornamental fish culture has the potential to generate income and create jobs, especially to the local youth. Ornamental fish culture is an activity, affordable by rural people, which requires, easily adoptable technology, and only a small amount of investment with higher profitability. It gives mental pleasure and relaxation from tension.

Objective

The Department of Zoology has selected Ornamental Fish culture & Aquarium Management as a Value Added Course to promote ornamental fish production, as the areas of Kottayam have plentiful availability of freshwater throughout the year and to generate self - employment.

Method

The course was imparted through a series of lectures (32 hrs.), field visits, and practical classes. 26 students from VIth semester B. Sc Zoology were selected for the course.


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