

























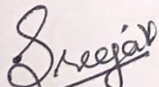


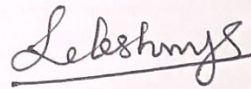
**MANNAM MEMORIAL NSS COLLEGE, KOTTIYAM**  
**STUDENT ENROLMENT LIST (2018-19)**

Name of department : Department of Zoology

Name of course : Aquarium construction and Maintenance

Sl No	Name of Student	Signature
1	AATHIPA P KUMAR	
2	ARYA MOHAN	
3	ASWATHY O V	
4	DEEPTHI S	
5	DEVI THUSHARA V T	
6	DIVYA SURESH	
7	PARVATHY P S	
8	RESHMA KRISHNAN	
9	VIGNESH S	
10	AMAL BABU	
11	AMAL RAJ	
12	ANJALI L S	
13	ANJU MOHAN	
14	ANJU S	
15	ASWATHY S KRISHNAN	
16	ATHULYA SURESH	
17	G AMAL KRISHNAN	
18	G SREELEKSHMI	
19	LEKSHMI CHANDRAN	
20	PONNU J	
21	SHIBINA R	
22	SNEHA A	
23	SREEHARI H	
24	UMAKUMARI U K	
25	VIJAYALEKSHMI V S	
26	VIJI V	

  
(Co-ordinator)

  
(HOD)



# SYLLABUS

DEPARTMENT OF ZOOLOGY  
MMNSS COLLEGE, KOTTIYAM  
ADD ON COURSE 2018-19  
AQUARIUM CONSTRUCTION AND MAINTENANCE

Total

## SYLLABUS

hours : 30

### OBJECTIVES OF THE COURSE:

- This certificate course is intended to train the students in aquarium keeping starting with the very basic aspects of aquarium fabrication, their setting and maintenance.
- The course on Aquarium keeping is an attempt at acquainting the students with the inner workings of fabrication, installation and maintenance of home aquarium.
- There has been an increasing trend of keeping ornamental fish among the general public.

**Course Outcomes:** At the end of the course, students will be able to:

- Economic aspects of aquarium keeping are also covered in this course.
- This skill is more self-employability oriented.
- The students would be able take up aquarium keeping as a source of income.
- Indulge students passion
- Develop skills to work in a commercial aquarium, zoo, or marine conservation.
- Create and manage feature aquariums in offices, shopping centres or other commercial locations.

## SYLLABUS

### MODULE 1 : INTRODUCTION TO AQUARIUM (5 hrs)

- 1.1 Definition of Aquarium, scope and history
- 1.2 Fabrication of home Aquarium
- 1.3 Design and construction of fresh water and marine Aquarium

### MODULE 2: ACCESSORIES OF AQUARIUM (5 hrs)

- 2.1 Aerators and its types, different kinds of filters





2.2 Thermostats for Aquaria, hand net and other equipments

### **MODULE 3: AQUARIUM SETTING**

**(10 hrs)**

3.1 Site selection for Aquaria

3.2 Setting up of an Aquarium, gravels, pebbles, plants and ornamental objects

3.3 Setting up of fresh water and marine Aquarium and accessories

### **MODULE 4: AQUARIUM MAINTENANCE**

**(10 hrs)**

4.1 Water quality parameters incase of aquaria

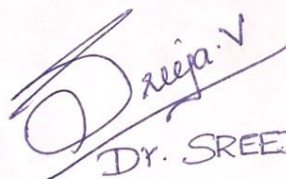
4.2 Cleaning of aquarium

4.3 Nutritional requirements of well known aquarium fishes, different kinds of feed

4.4 Control of algae and snail

### **References**

1. Guide to keeping and breeding the aquarium fishes (1968). Bombay aquarium Society, Mumbai.
2. Fresh water aquarium, Dawes, J.A., Roberts Royce Ltd. London
3. A Text Book of Pisciculture and Aquarium Keeping- Dhananjay Jadhav, Mohan Babre.
4. Hand Book of Fish aquarium- Hiware and Sonwane

  
DR. SREEJA V  
Course - Coordinator





DEPARTMENT OF ZOOLOGY  
COURSE: AQUARIUM CONSTRUCTION AND  
MAINTENANCE

COURSE SCHEDULE

02/10/2018 (Tuesday)	3.30-4.30pm	Introduction of Aquarium
03/10/2018 (Wednesday)	3.30-4.30pm	History and Scope
04/10/2018 (Thursday)	3.30-4.30pm	Fabrication of Home Aquarium
05/10/2018 (Friday)	3.30-4.30pm	Design and Construction of freshwater aquarium
06/10/2018 (Saturday)	9.00-1.00pm	Design and Construction of Marine aquarium
15/10/2018 (Monday)	3.30-4.30pm	Different types of Aerators
16/10/2018 (Tuesday)	3.30-4.30pm	Different kinds of filters
17/10/2018 (Wednesday)	3.30-4.30pm	Thermoclat
18/10/2018 (Thursday)	3.30-4.30pm	Equipments
19/10/2018 (Friday)	3.30-4.30pm	Site Selection for Aquaria
20/10/2018 (Saturday)	9.00-1.00pm	Setting up of Aquaria
05/11/2018 (Monday)	3.30-4.30pm	Plants and Ornamental Objects
06/11/2018 (Tuesday)	3.30-4.30pm	Fresh water aquarium accessories
07/11/2018 (Wednesday)	3.30-4.30pm	Marine aquarium accessories
08/11/2018 (Thursday)	3.30-4.30pm	Water quality parameters-physical
09/11/2018 (Friday)	3.30-4.30pm	Water quality parameters-Chemical
10/11/2018 (Saturday)	9.00-1.00pm	Cleaning of Aquarium
19/11/2018 (Monday)	3.30-4.30pm	Nutritional Requirements
20/11/2018 (Tuesday)	3.30-4.30pm	Different kinds of feed
21/11/2018 (Wednesday)	3.30-4.30pm	Control of algae
22/11/2018 (Thursday)	3.30-4.30pm	Control of Snail
03/12/2018 (Monday)		End Course Evaluation



*Sreeja V*

DR. SREEJA V

Course - Coordinator



NCE

**MMNSS COLLEGE, KOTTIYAM**  
**DEPARTMENT OF ZOOLOGY**  
**END COURSE EVALUATION OF ADD ON COURSE 2018-19**  
**AQUARIUM CONSTRUCTION AND MAINTENANCE**

**Max marks: 25**

**Time: 1 hr**

**Section A. Answer all questions** in one or two sentences **(5×1= 5)**

1. Give an example of invasive ornamental fish.
2. Give the scientific name of Angel fish.
3. What is an Aquarium?
4. How do you remove chlorine from water?
5. Write the name of an antibacterial agent used in fish transportation

**Section B. Answer any 4 of the following** **(4×2=8)**

6. What is a living capsule of nutrition?
7. What is the purpose of using aerators in aquariums?
8. Analyze the potential of aquarium fishes as larval predators
9. How to control snail in aquarium?
10. Outline the process of Artemia culture.
11. Name one rooted and one floating plant used in aquarium.

**Section C. Answer any 3 of the following** **(3×4= 12)**

12. What do you mean by open and closed system of fish transport? Mention the principles and factors which are associated with fish transport. How do you transport broodfish?
13. Write about the preparation procedure of formulated fish feed. What is the composition of fish food that is used in aquariums?
14. How would you build a good aquarium? Which factors will affect the water quality of an aquarium?
15. Elucidate briefly the potential scope of the aquarium fish keeping industry as a cottage industry.
16. Describe the Water quality parameters in the case of aquaria.



**Mark sheet of end course evaluation of the Add on course Aquarium**

**Construction & Maintenance(2018-19)**

Sl. No:	Name	Candidate code	Mark (25)	Signature
1	AATHIPA P KUMAR	25016116001	25	<i>Aathipa</i>
2	ARYA MOHAN	25016116003	22	<i>Arya</i>
3	ASWATHY O V	25016116004	16	<i>Aswathy</i>
4	DEEPTHI S	25016116005	23	<i>Deepthi</i>
5	DEVI THUSHARA V T	25016116006	25	<i>Devi Thushara</i>
6	DIVYA SURESH	25016116007	23	<i>Divya</i>
7	PARVATHY P S	25016116008	22	<i>Parvathy</i>
8	RESHMA KRISHNAN	25016116009	24	<i>Reshma</i>
9	VIGNESH S	25016116010	22	<i>Vignesh</i>
10	AMAL BABU	25016116011	21	<i>Amal Babu</i>
11	AMAL RAJ	25016116012	15	<i>Amal</i>
12	ANJALI L S	25016116013	22	<i>Anjali</i>
13	ANJU MOHAN	25016116014	24	<i>Anju</i>
14	ANJU S	25016116015	19	<i>Anju</i>
15	ASWATHY S KRISHNAN	25016116016	19	<i>Aswathy</i>
16	ATHULYA SURESH	25016116017	18	<i>Athulya</i>
17	G AMAL KRISHNAN	25016116018	23	<i>G Amal</i>
18	G SREELEKSHMI	25016116019	23	<i>G Sreelekshmi</i>
19	LEKSHMI CHANDRAN	25016116021	21	<i>Lekshmi</i>
20	PONNU J	25016116022	20	<i>Ponnu</i>
21	SHIBINA R	25016116024	23	<i>Shibina</i>
22	SNEHA A	25016116025	25	<i>Sneha</i>
23	SREEHARI H	25016116026	17	<i>Sreehari</i>
24	UMAKUMARI U K	25016116027	14	<i>Umakumari</i>
25	VIJAYALEKSHMI V S	25016116028	25	<i>Vijayalekshmi</i>
26	VIJI V	25016116029	18	<i>Viji</i>

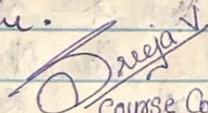
*Sheela David*  
HOD, Dept Of Zoology  
M M N S S College  
Kottiyam - 691571

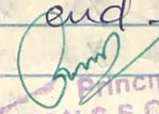
*Sreeja V*  
Dr. SREEJA V  
Course Co-ordinator



## COURSE REPORT

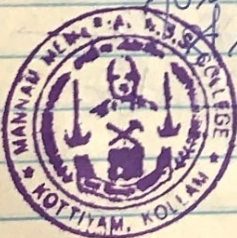
Aquarium construction and maintenance is a course which designed to train the students to learn the proper scientific process of aquarium construction and setting with perfect aquarium accessories. 26 students attended the course successfully and showed their passion on this course. This course enabled the students to take up aquarium keeping as a source of income. One can easily earn money by constructing only the aquarium structure and selling it. The course covered the topics like accessories of aquarium, aquarium setting and aquarium maintenance. The start of the course was on 2nd October and ended on 03/12/2018 by end-course evaluation.

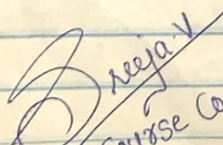
  
Course Coordinator

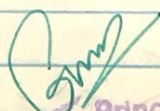
  
Principal  
M.M.N.S.S. COLLEGE  
KOTTIYAM

## FEED BACK REPORT BY STUDENTS

Aquarium construction and maintenance course helped the students to opt a different professional skill. This course would be a beneficial and demanding one for all the students to go for a different profession instead of the main stream job.



  
Course Co-ordinator

  
Principal  
M.M.N.S.S. COLLEGE  
KOTTIYAM