



**SARVODAYA KELAVANI SAMAJ MANAGED,  
SHREE MANIBHAI VIRANI & SMT. NAVALBEN VIRANI SCIENCE COLLEGE**

**AN AUTONOMOUS COLLEGE- AFFILIATED TO SAURASHTRAUNIVERSITY,  
RAJKOT**

Re-accredited at the 'A' Level (CGPA 3.28) by NAAC  
'STAR' College Scheme & Status by MST-DBT  
A College with Potential for Excellence - CPE (Phase-II) by UGC  
UGC-DDU KAUSHAL Kendra  
Accredited at the G-AAA Highest Grade 'A-1' Level by KCG, Govt. of Gujarat  
UGC-DDU KAUSHAL Kendra  
GPCB-Government of Gujarat approved Environment Audit Centre

**(Enclosure - I A4)**

Department: Biology

Programme: **B.Sc. All Programmes**

| <b>Course Code</b> | <b>Course Title (Ap)</b>   | <b>Credits</b>   |
|--------------------|----------------------------|------------------|
| <b>21UBLVA02</b>   | <b>Aquarium Management</b> | <b>3 Credits</b> |

**Course Description:**

This course introduces the freshwater hobbyist to various aspects of successful aquaria management. Rather than being an entertainment guide, which extols the virtues of one or other approach to aquaria management, this course presents the basic principles, themes and steps needed to set-up and maintain a freshwater aquarium.

**Course Purpose:**

The course provides the key skills needed to set up and operate the aquarium business. This course also fulfills the requirements in order to maintain fish health, quality water chemistry and nutritional requirements, aquarium plants and ornamental plants. The practical section of the course, taught to build new aquarium house, on how to keep fish and aquatic animals as pets, Which fish can live together and those that just don't get along. Students will also learn how to look after them including health care and managing water quality.

| <b>Course Outcomes:</b> Upon completion of this course, the learner will be able to |  |   |
|---|--|---|
| <b>CO No.</b>   | <b>CO Statement</b>  | <b>Blooms taxonomy Level (K1 to K6)</b> |
| CO <sub>1</sub>   | Describe a basic knowledge and understanding on the Aquarium Tank, its arrangement and settings. | K1 and K2                               |
| CO <sub>2</sub>   | Illustrate basics Knowledge of Aquarium fishes.  | K2 and K3                               |
| CO <sub>3</sub>   | Develop understanding of Aquarium plants and its importance.                                     | K2 and K1                               |
| CO <sub>4</sub>   | Basic knowledge, identification and functions of aquarium instruments and fish food.             | K1 and K3                               |
| CO <sub>5</sub>   | Gives awareness regarding to aquarium fish disease and its cure.                                 | K2 and K3                               |

| <b>Course Content</b>   | <b>Hours</b> |
|---|--------------|
| <b>Unit -I: Aquarium Tank and setting</b>   | 9Hrs         |
| <ul style="list-style-type: none"> <li>• Types of tank</li> <li>• Tank selection</li> <li>• Tank setting and position</li> <li>• Aquascaping.</li> </ul>  |              |
| <b>Unit-II Aquarium Fishes</b>  | 9 Hrs        |
| <ul style="list-style-type: none"> <li>• Characters of Aquarium fishes.</li> <li>• Community Aquarium fishes.</li> <li>• Ornamental fishes.</li> <li>• Marine Aquarium fishes.</li> </ul>                           |              |
| <b>Unit- III Aquarium Plants</b>  | 9 Hrs        |
| <ul style="list-style-type: none"> <li>• Introduction to Aquarium plants.</li> <li>• Importance of Aquarium plants.</li> <li>• Types of Aquarium plants.</li> <li>• Arrangement of Aquarium plants.</li> </ul>      |              |
| <b>Unit- IV Aquarium Equipments and fish food</b>   | 9 Hrs        |
| <ul style="list-style-type: none"> <li>• Common Aquarium equipments.</li> <li>• Arrangement of Aerator and Filters.</li> <li>• Fish food management.</li> <li>• Fish food nutrition and its requirement.</li> </ul> |              |
| <b>Unit-V Aquarium Fish Diseases</b>  | 9 Hrs        |

|   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• Common aquarium diseases.</li> <li>• Types of aquarium fish diseases.</li> <li>• Cause, symptoms of aquarium diseases.</li> <li>• Cure and treatment for fish diseases.</li> </ul> |  |
|---|--|

### **Text Books:**

1. Jordan E. L & Varma P.S. (2010) Non-chordate Zoology, S.Chand & Co. Ltd. New Delhi, 4<sup>th</sup> edition. (for unit 1, 2 & 5).
2. Powar Nagendra S. (2018) Applied Zoology 2<sup>nd</sup> edition, Adhyayan Publisher and Distributor.
3. Kotpal R. L. Modern Text Book of Zoology: Invertebrate, Rastogi Publications, Merrut.
4. Rastogi, V. B. (1994) Organic evolution. Kedarnath Ramnath, India. (for unit 4).

### **References:**

1. Barnes, R.S.K., Calow, P., Olive, P.J.W., Golding, D.W. and Spicer, J.I. (2002). *The Invertebrates: A New Synthesis*, III Edition, Blackwell Science .
2. Walter, H.E. and Sayles, L.P; *Biology of Vertebrates*, Khosla Publishing House

### **Practicals :**

**16**

1. Study of different types of aquarium tanks.
2. Study to aquarium tank arrangement.
3. Aquarium tank setting.
4. Characteristics of Fish.
5. Study of common aquarium fishes.
6. Study of common aquarium plants.
7. Demonstration to fish feed.
8. Study of some aquarium diseases.

### **Pedagogic tools:**

- Chalk and Board
- Power point presentation
- Seminar
- Videos
- By field visit
- e-learning – Facebook page Royal Botany
- By models, specimens, charts, permanent slides
- By workshop

**Methods of Assessment & Tools:**

Components of CIE: 30 marks : Theory:

| Sr. No.               | Component      | Content   | Duration (if any)      | Marks           | Sub Total |
|-----------------------|----------------|---|------------------------|-----------------|-----------|
| <b>A</b>              | Test 1         | 1 <sup>st</sup> 2 units   | 1 <sup>1/2</sup> hours | 5 (Set for 30)  | 20        |
|                       | Test 2         | All 5 units   | 3 hours                | 15 (Set for 70) |           |
| <b>B</b>              | Assignment     |   |                        | 05 (Set for 20) | 10        |
| <b>C</b>              | Class activity |   |                        | 05 (Set for 20) |           |
| <b>Grand Total</b>    |                |   |                        |                 | <b>30</b> |
| <b>Assignment</b>     |                | <ul style="list-style-type: none"> <li>• Question answer</li> <li>• Student generated hand book</li> <li>• Essay writing</li> <li>• Case study</li> <li>• Abstract and exclusive study</li> <li>• Power presentation</li> <li>• Chart/model</li> <li>• Poster</li> <li>• Herbarium preparation</li> </ul> |                        |                 |           |
| <b>Class activity</b> |                | <ul style="list-style-type: none"> <li>• Quiz</li> <li>• One minute game on the base of the topic</li> <li>• Group discussion,</li> <li>• Student talk, etc...</li> </ul>   |                        |                 |           |

Components of CIE: 40 marks : Practical:

| Sr. No.            | Component                    | Content                 | Duration (if any) | Marks           | Sub Total |
|--------------------|------------------------------|-------------------------|-------------------|-----------------|-----------|
| <b>A</b>           | Test                         | 60% of Practical course | 2 hours           | 30 (Set for 30) | 30        |
| <b>B</b>           | Observation books and record | All Practicals          | -                 | 10 (Set for 10) | 10        |
| <b>Grand Total</b> |                              |                         |                   |                 | <b>40</b> |

