

**ST. JOSEPH'S COLLEGE FOR WOMEN (A), VISAKHAPATNAM**

**Four Year – B.Sc. (Hons), Semester – VII**

**Zoology**

(Skill Enhancement Course- Aquaculture)

**HATCHERY TECHNOLOGY IN AQUATIC ORGANISMS**

**Code: Z 7504(3)**

**Time:4hrs/week  
Max Marks:100**

**LEARNING OBJECTIVES:** Enable the students

- To Gain knowledge about the importance of hatchery technology & hatchery operations.
- To Acquire knowledge in shrimp hatchery establishment and management
- To gain knowledge in seed production of crustaceans and Molluscs.
- Evaluate emerging trends and future directions in hatchery technology.
- To understand the importance of SPR & SPF seed.

**LEARNING OUTCOMES:** Students will be able to

- Gain knowledge of the construction and management of hatcheries.
- Summarise the brood stock management.
- Learn the essential criteria for hatchery design & management.
- Describe the various stages during operation of a hatchery
- Recognize the importance & necessity of hatchery system in aquaculture.

**I. SYLLABUS**

**UNIT-1: INTRODUCTION TO HATCHERY TECHNOLOGY**

- 1.1 Importance of hatchery technology in aquaculture
- 1.2 History and development of hatchery technology
- 1.3 Types of fish hatcheries.

**UNIT-2 FISHES HATCHERY ESTABLISHMENT AND MANAGEMENT**

- 2.1 Site selection, Facility design and construction
- 2.2 Broodstock management, Spawning induction-methods
- 2.3 Egg incubation, Larval rearing, Fry rearing, Grow-out production
- 2.4 Disease prevention and management, Record keeping

### **UNIT-3: SHRIMP HATCHERY ESTABLISHMENT AND MANAGEMENT**

- 3.1. Site selection; Operation and management of maturation section.
- 3.2. Operation and management of larval section; Operation and management of postlarval section.
- 3.3. Live feed culture system (Artemia & Microalgae), Hatchery seawater filtration & treatment (Sand filtration, UV treatment, Ozone treatment).

### **UNIT-4: SEED PRODUCTION OF CRUSTACEANS AND MOLLUSCS**

- 4.1. Seed production, seed packaging & transport and nursery rearing of *Penaeus vannamei* and *Macrobrachium rosenbergii*.
- 4.2 Hatchery operations of pearl oysters
- 4.3 Hatchery operations of lobster.

### **UNIT-5 ADVANCES IN HATCHERY TECHNOLOGY**

- 5.1 Automated and computer-controlled systems in aquaculture hatcheries
- 5.2 Biotechnology and genetics in hatcheries- disease management, Quarantine methods, Production of SPF & SPR feed.
- 5.3 Emerging trends and future directions of hatcheries- Sustainable practices,

Alternative species and systems, Traceability and transparency, collaboration and partnerships

## **II. REFERENCE BOOKS**

- Hatchery Management by B. C. Rath
- Aquaculture: Farming Aquatic Animals and Plants by John S. Lucas and Paul C. Southgate
- Fish Hatchery Management by Frank W. Wheaton and David L. Keller
- Principles of Fishery Science by R. J. Welcomme
- Hatchery Technology for Tropical Species by Patrick Lavens and Patrick Sorgeloos
- Fish Hatchery Management, Second Edition by Gary Wedemeyer
- Aquaculture Engineering by Odd-Ivar Lekang
- Introduction to Aquaculture by J. R. Tomasso

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