

**OBJECTIVES: To enable the students to**

- Develop insight about the systems and practices in aquaculture.
- Outline the technique of induced breeding for propagation of species and contributes significantly to the overall aquaculture production.
- Realize the importance of maintaining soil & water quality parameters in the management of culture ponds.
- Recognize the factors for successful management of carp culture ponds.
- Identify fin and shell fish diseases.

**COURSE OUTCOMES: By the end of the course, students will be able to:-**

- CO1: Appraise about the culture practices, systems and selection of species for aquaculture.  
CO2: Review and plan the layout, design and construction of a pond using theoretical knowledge.  
CO3: Summarise the technique of induced breeding.  
CO4: Develop insight into the prestocking, stocking and post stocking management of carp culture ponds.  
CO5: Gain insight on the disease management of Fin fish and shell fishes.

**UNIT: I**

- 1.1 Present status of Aquaculture–Global and National scenario.
- 1.2 Criteria for selection of species for culture. Major cultivable species for aquaculture: fresh water, brackish water and marine.
- 1.3 **Culture Practices:** Traditional, extensive, modified extensive, semi-intensive and intensive culture of fish and shrimp.
- 1.4 Design and construction of fish and shrimpfarms

**UNIT: II**

- 2.1 **Culture systems in Aquaculture:** Ponds, Raceways, Cages, Pens and Rafts.
- 2.2 Functional classification of ponds -Nursery, Rearing, stocking and quarantine ponds
- 2.3 Need of fertilizer and manure application in culture ponds
- 2.4 Physio-chemical conditions of soil and water optima for culture (Temperature, depth, turbidity, PH, BOD, CO<sub>2</sub> and nutrients (N,P,K and C/N ratio)

**UNIT: III**

- 3.1. Induced breeding in Carps and Shrimps.
- 3.2. Culture of Indian major carps: Pre-stocking management (Dewatering, drying, ploughing/ desilting; Predators, weeds and algalblooms and their control, Liming and fertilization)
- 3.3. Culture of Indian major carps-Stocking management
- 3.4. Culture of Indian major carps-post-stocking management

**UNIT: IV**

- 4.1 Commercial importance of shrimp & prawn
- 4.2 *Macro brachium rosenbergii*-biology, seed production.
- 4.3 Culture of *P. vannamei* – hatchery technology and culture practices
- 4.4 Mixed culture of fish and prawns, integrated fish farming.

**UNIT: V**

- 5.1 Viral diseases of Fin Fish & shellfish-Any 4
- 5.2 Fungal diseases of Fin & Shellfish- Any 4
- 5.3 Bacterial diseases of Fin fish & Shellfish-Any 4
- 5.4 Protozoan and Helminthic diseases (Trematodes and cestodes)- Any 2 each

**REFERENCE BOOKS:**

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2. Stickney RR 1979. Principles of Warm Water Aquaculture. John Wiley & Sons Inc. 1981
3. Boyd CE 1982. Water Quality Management for Pond Fish Culture. Elsevier Scientific Publishing Company.
4. Bose AN et al. 1991. Coastal Aquaculture Engineering. Oxford & IBH Publishing Company Pvt. Ltd.
5. Chakraborty C & Sadhu AK. 2000. Biology Hatchery and Culture Technology of Tiger Prawn and Giant Freshwater Prawn. Daya Publ. House. FAO. 2007. Manual on Freshwater Prawn Farming.
6. Jhingran V.G. 2007. Fish and Fisheries of India. Hindustan Publ. Corporation, India.
7. MPEDA: Handbooks on culture of carp, shrimp, etc.
8. "Fishery Science & Indian Fisheries" by C.B.L. Srivastava – Kitab Mahal, Allahabad – Edition: 1988.
9. "An Introduction to Fishes" by S.S. Khanna – Central Book Depot, Allahabad – Edition: 1996.
10. "Prawn & Prawn Fisheries of India" by C.V. Kurrian & V O Sebastian –
11. Hindustan Publishing Corporation, Delhi – Edition: 1986.
12. "A Text book of Fish Biology & Indian Fisheries" by Parihar – Central Publishing House, Allahabad.
13. "Hand Book of Fish Biology and Indian Fisheries by Parihar-Central Publishing House, Allahabad. (2003)

**Web Links:**

1. [http://www.fao.org/fishery/docs/CDrom/FAO\\_Training/FAO\\_Training/General/x6708e/x6708e06.htm](http://www.fao.org/fishery/docs/CDrom/FAO_Training/FAO_Training/General/x6708e/x6708e06.htm)
2. [http://aquaticcommons.org/1666/1/Better-Practice3\\_opt.pdf](http://aquaticcommons.org/1666/1/Better-Practice3_opt.pdf)
3. <https://www.notesonzooology.com/india/fishery/fish-diseases-symptoms-and-control-fishery/871>