

SRI VENKATESWARA UNIVERSITY:TIRUPATI

Subject : AQUACULTURE

w.e.f. Academic Year 2023-24

COURSE STRUCTURE

Year	Semester	Course	Title of the Course	No. of Hours / Week	No. of Credits
I	II	1	Taxonomy and Functional Anatomy of fin fish and shell fish	3	3
			Taxonomy and Functional anatomy of fin fish and shell fish – Practical course	2	1
II	III	2	Basic Principles of Aquaculture	3	3
			Basic Principles of Aquaculture – Practical course	2	1
	IV	3	Fish Health Management	3	3
			Fish Health Management – practical course	2	1
		4	Shrimp Health Management	3	3
			Shrimp Health Management - Practical	2	1
III	V	5	Extension, Economics and Marketing	3	3
			Extension, Economics and Marketing – practical course	2	1
		6	Ornamental Fishery theory	3	3
			Ornamental Fishery practical	2	1
	VI		Long term Internship		
	VII	7	Post Harvesting Technology and Transport	3	3
			Post Harvesting Technology and Transport – Practical course	2	1
	VIII	8	Crustacean Culture	3	3
			Crustacean Culture – Practical course	2	1

SRI VENKATESWARA UNIVERSITY:TIRUPATI

IV SEMESTER – W.E.F. 2024-25

Subject : AQUACULTURE

(MINOR)

COURSE NO.: 9 - FISH HEALTH MANAGEMENT

credits :3

COURSE OUTCOMES:

1. Provide students with knowledge about fish diseases and pathological aspects of diseases.
2. Learn about Fungal, Viral and Bacterial diseases of finfish.
3. Gain knowledge of Nutritional deficiency related diseases and antibiotic and chemotherapeutics.
4. Understand and learn the importance of diagnostic tools in identification of diseases and application and development of vaccines.

UNIT I: Pathology and parasitology

- 1-1 Introduction to fish diseases –Definition and categories of diseases – Disease and environment
- 1-2 Disturbance in cell structure – changes in cell metabolism, progressive and retrogressive tissue changes, types of degeneration, infiltration, necrosis, cell death and causes
- 1-3 Atrophy, hypertrophy, neoplasms, inflammation, healing and repair

UNIT II: Fungal and viral Diseases of fin fish.

- 2-1 Fungal diseases (both of shell and finfish) – Saprolegniosis, brachiomycosis, ichthyophorus diseases – Lagenidium diseases – Fusarium disease, prevention and therapy
- 2-2 Viral diseases – Emerging viral diseases in fish, haemorrhagic septicemia, spring viremia of carps, infectious hematopoietic necrosis in trout, infectious pancreatic necrosis in salmonids, swim-bladder inflammation in cyprinids, channel cat fish viral disease, prevention and therapy

UNIT III: bacterial Diseases of fin fish.

- 2-3 Bacterial diseases – Emerging bacterial diseases, aeromonas, pseudomonas and vibrio infections, columnaris, furunculosis, epizootic ulcerative syndrome, infectious abdominal dropsy, bacterial gill disease, enteric red mouth, bacterial kidney disease, proliferative kidney disease, prevention and therapy

UNIT IV: Protozoan Diseases of fin fish.

Protozoan diseases: Ichthyophthiriasis(White spot Disease), Costiasis, Whirling disease

UNIT V: Nutritional diseases

- 4-1 Nutritional pathology – lipid liver degeneration, Vitamin and mineral deficiency diseases. Aflatoxin and dinoflagellates.
- 4-2 Antibiotic and chemotherapeutics. Nutritional cataract. Genetically and environmentally induced diseases.

Verified and Approved By Dr. M. VANI HOD and BOS chair person (Zoology)

IV SEMESTER

Course No.: 9 - Fish Health Management

credits :1

1. Enumeration of Bacteria by TPC Method
2. Enumeration of total Coli forms
3. Observation of gross pathology and external lesions of fish with reference to the common diseases in aquaculture
4. Examination of pathological changes in gills and gut lumen, lymphoid organ, muscles and nerves of fish
5. Collection, processing and analysis of data for epidemiological investigations of viral diseases
6. Bacterial pathogens – isolation, culture and characterization
7. Identification of parasites in fishes: Protozoan, Helminths, Crustaceans
8. Estimation of dose, calculation of concentration, methods of administration of various Chemo-therapeutics to fish and shell fish
9. Estimation of antibiotics used in aquaculture practices

PRESCRIBED BOOK(S):

1. Shaperclaus W. 1991 Fish Diseases- Vol.I & II.Oxonian Press Pvt.ltd
2. Roberts RJ 1989. Fish pathology.BailliereTindall, New York
3. Lydia Brown 1993. Aquaculture for veterinarians- fish husbandry and medicine, Pergamon Press. Oxford

REFERENCES:

1. Shankar KM & Mohan CV. 2002. Fish and Shellfish Health Management. UNESCO Publications,Sindermann CJ. 1990
2. Walker P &Subasinghe RP. (Eds.). 2005 Principal Diseases of Marine Fish and Shellfish.Vols. I, II. 2nd Ed. Academic Press
3. DNA Based Molecular Diagnostic Techniques: Research Needs for Standardization and Validation of the Detection of Aquatic Animal Pathogens and Diseases.FAO Publications,Wedmeyer G, Meyer FP & Smith L. 1999.
4. Bullock G et.al., 1972 Bacterial diseases of fishes. TFH publications, New Jersey
5. Post G 1987. Text book of Fish Health. TFH publications, New Jersey
6. Johnson SK 1995. Handbook of shrimp diseases. Texas A & M University, Texas

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IV SEMESTER

Course No.: 9 - Fish Health Management

MODEL QUESTION PAPER

SECTION – A

Answer any five of the following

5 X 4 = 20

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

SECTION – B

Answer any FIVE of the following

5 X 10 = 50

UNIT – I

9. a .

OR

b

UNIT – II

10.a

OR

b

UNIT – III

11.a. .

OR

b

UNIT – IV

12 a.

OR

b. .

UNIT – V

13.a.

OR

b.

IV SEMESTER

Course No.: 9 - Fish Health Management

MODEL PRACTICAL QUESTION PAPER

- | | |
|---------------------|------------|
| 1. EXPERIMENT -1 | 20X1= 20 |
| 2. EXPERIMENT-2. | 15X1 =15 |
| 3. Viva voce | 5 x1 = 05. |
| | 10 x 1 =10 |
| 4. Certified Record | |

50 Marks

SRI VENKATESWARA UNIVERSITY:TIRUPATI

IV SEMESTER – W.E.F. 2024-25

Subject : AQUACULTURE

(MINOR)

Course No.:10 - SHRIMP HEALTH MANAGEMENT

credits :1

COURSE OUTCOMES:

1. Provide students with knowledge about shrimp diseases and pathological aspects of diseases.
2. Learn about Fungal, Viral and Bacterial diseases of shellfish.
3. Gain knowledge of Nutritional deficiency related diseases and antibiotic and chemotherapeutics.
4. Understand and learn the importance of diagnostic tools in identification of diseases and application and development of vaccines.
5. To know about production of disease free seeds and good feed management.

SYLLABUS

UNIT I: Viral Diseases of shell fish (Symptoms, Treatment and Prophylaxis)

- 1-1 Major shrimp viral diseases – Baculovirus penaei, Monodon Baculovirus
- 1-2 Baculoviral midgut necrosis, Infectious hypodermal and haematopoietic necrosis virus, Hepatopancreatic parvo like virus
- 1-3 Yellow head baculovirus, white spot baculovirus.

UNIT II: Bacterial Diseases of shell fish (Symptoms, Treatment and Prophylaxis)

- 2.1 Bacterial diseases of shell fish – aeromonas, pseudomonas and vibrio infections
- 2.2 Luminous bacterial disease, filamentous bacterial disease. Prevention and therapy

UNIT III: Protozoan Diseases of shell fish (Symptoms, Treatment and Prophylaxis)

- 3-1 Protozoan diseases- Ichthyophthiriasis, Costiasis,
- 3-2 Whirling diseases, trypanosomiasis

UNIT IV: Health management

- 4-1 Diagnostic tools – immune detection- DNA/RNA techniques, General preventive methods and prophylaxis. Applications and development of vaccines.
- 4-2 Quarantine – Significance, methods and regulations for transplants.

UNIT V: Production of disease free seeds

5-1 Production of disease-free seeds.Evaluation criteria of healthy seeds.

5-2 Good Feed management for healthy organisms, Zero water exchange, Probiotics in

Verified and Approved ByDr.M.VANI HOD and BOS chair person (Zoology)

IV SEMESTER

Course - Shrimp Health Management

credits :1

1. Enumeration of Bacteria by TPC Method
2. Observation of gross pathology and external lesions of fish and prawn with reference to the common diseases in aquaculture
3. Examination of pathological changes in gut lumen, hepato-pancrease, lymphoid organ, muscles and nerves of prawn and shrimp
4. Collection, processing and analysis of data for epidemiological investigations of viral diseases
5. Bacterial pathogens – isolation, culture and characterization
6. Antibigrams – preparation and evaluation
7. Molecular and immunological techniques; Biochemical tests; PCR; ELISA; Agglutination test; Challenge tests; Purification of virus for development of vaccines (Demonstration at institutes/labs)
8. Estimation of dose, calculation of concentration, methods of administration of various chemotherapeutics to fish and shell fish
9. Estimation of antibiotics used in aquaculture practices
10. Estimation of probiotics used in aquaculture.

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IV SEMESTER

Course: Shrimp Health Management

MODEL QUESTION PAPER

SECTION – A

Answer any five of the following

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SECTION – B

Answer any FIVE of the following

5 X 10 = 50

UNIT – I

9. a .

OR

b

UNIT – II

10.a

OR

b

UNIT – III

11.a. .

OR

b

UNIT – IV

12 a.

OR

b. .

UNIT – V

13.a.

OR

b.

IV SEMESTER

Course: Shrimp Health Management

MODEL PRACTICAL QUESTION PAPER

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