

6th SEMESTER
DISCIPLINE SPECIFIC ELECTIVES (DSEs)
IFF616D: INDUSTRIAL FISH AND FISHERIES

CREDITS: THEORY: 4, PRACTICAL: 2

OPTION - I

IFF616DA: INDUSTRIAL FISH AND FISHERIES: ORNAMENTAL FISHERIES

SYLLABUS THEORY

Unit I: Introduction to ornamental fishes

- 1.1. Important ornamental fishes and their biology
- 1.2. Use of pigments for colour enhancement
- 1.3. Maturation and Secondary sexual characters
- 1.4. Breeding habits and Parental care

Unit II: Ornamental fish breeding I

- 2.1. Guppy
- 2.2. Molly
- 2.3. Swordtail
- 2.4. Gourami

Unit III: Ornamental fish breeding II

- 3.1. Goldfish
- 3.2. Angel fish
- 3.3. Fighter fish
- 3.4. Rasbora

Unit IV: Non fish ornamental organisms and transport

- 4.1. Morphology and bionomics of Sea anemone. Starfish, sea cucumber
- 4.2. Importance and morphology of aquarium plants: Valisneria, Sagitaria, Ceratophyllum, Cabomba
- 4.3. Multiplication of aquarium plants
- 4.4. Transportation of ornamental organisms and sedatives

PRACTICAL

(2 CREDITS)

1. Breeding and rearing of ornamental fishes in Laboratory
 - a. Gold fish (*Caracius auratus*)
 - b. Angel Fish (*Cterophylum scalare*)
 - c. Fighter fish (*Betta splendens*)
 - d. Sword tail (*Xyphophorus helleri*)
 2. Identification of different ornamental organisms
 - a. Sea anemone
 - b. Sea cucumber
 - c. Sea urchin
 - d. Star fish etc.
 3. Identification and multiplication of different aquarium plants.
 4. Transportation of Aquarium fish. Use of sedatives during transportation
 5. Identification and study of sexual dimorphism n aquarium fishes
 6. Use of different pigments for colour enhancement in aquarium fishes
 7. Provision of nutrients and optimum environmental conditions for the growth of aquarium plants.
 8. Visit to different aquarium units.
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OPTION - II

IFF616DB: INDUSTRIAL FISH AND FISHERIES: AQUACULTURE AND EXTENSION EDUCATION

SYLLABUS THEORY

Unit I: Aquaculture

- 1.1. Site selection and construction
- 1.2. Size and depth of ponds, dykes
- 1.3. Pond renovation and maintenance
- 1.4. Placement of different types of ponds in a fish farm

Unit II: Management in Aquaculture

- 2.1. Water quality and soil conditions of fish pond
- 2.2. Management of soil and water for aquaculture
- 2.3. Feeding techniques. Natural food and its importance in aquaculture
2.3.1. Management of feeding
- 2.4. Management of field problems in aquaculture

Unit III: Genetics and Aquaculture

- 3.1. Genetic improvement of stock
- 3.2. Genetics of qualitative phenotypes
- 3.3. Sex linked phenotypes, sex manipulation and hybridisation
- 3.4. Different methods of breeding

Unit IV: Fisheries Extension Education

- 4.1. Definition and principles of extension. Need of aquaculture extension
- 4.2. Qualities of an ideal extension officer
- 4.3. Principles of extension programme planning. Aquaculture extension schemes
- 4.4. Use of modern technologies in extension

PRACTICAL

(2 CREDITS)

1. Collection and analysis of soil and water samples for physiochemical parameters
 2. Visit to different fish farms to observe the preparation of nursery, rearing and stocking ponds
 3. Identification of seed of cultivable fish species, Seed stocking.
 4. Assessment of water quality experimental treatment. Case study and field visit
 5. Problems in genetics, maintenance of brood fish
 6. Study of different aquaculture extension schemes
 7. Visit to fishermen village to popularize modern technologies in Aquaculture
 8. Examination of Planktons from culture ponds
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OPTION - III

IFF616DC: INDUSTRIAL FISH AND FISHERIES: QUALITY CONTROL AND FISHERIES PLANNING

SYLLABUS THEORY

Unit I: Quality control I

- 1.1. Shelf life of fresh and preserved fish
- 1.2. Quality control of fresh and processed fish and fishery products
- 1.3. Sanitation in processing plant
- 1.4. Disinfection of dried fishery products and quarantine

Unit II: Quality control II

- 2.1. Edible, industrial and pharmaceutical products from sea weeds
- 2.2. HACCP
- 2.3. Food poisoning intoxication and allergies from processed or preserved fish
- 2.4. Packaging and marketing

Unit III: Fisheries Extension

- 3.1. Extension Education –objectives and principles
- 3.2. Role of Extension in Fisheries community development
- 3.3. Rural development strategies-programme for weaker sections of the community
- 3.4. Extension Strategies and methodologies

Unit IV: Fisheries Planning

- 4.1. Planning and financial schemes for fisheries
- 4.2. Financial agencies in fisheries sector
- 4.3. Fisheries Cooperatives and marketing
- 4.4. Fisheries Legislation

PRACTICAL

(2 CREDITS)

1. Visit to various fish processing units
 2. Study of sanitation and quality control of different processed fish and fish products
 3. Visit to fish farms to study the economic aspects of fish
 4. Study of various fisheries development programmes and schemes
 5. Visit to fishermen villages to popularize fishery activities and to study field problems
 6. Discussion with fish farmers, participation in fishing and fish processing activities of Government and private agencies
 7. Visit to different fish markets and cooperative.
 8. Study of local fishing vessels used in the valley
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