SYLLABUS

FISHERY SCIENCE (HONS./PG)

CODE – 37

A. Biology fish and other culturable organism.

1. Classification of fish. Important orders of fish, characters and examples.
2. Functional anatomy of fish (Elasmobranch and Teleostean fish).
   External morphology, Feeding and digestion, Respiration including accessory respiratory system, Heart and circulation, Sensory system, excretion, osmoregulation, reproductive system, Parental care, migration.
3. External morphology, alimentary and reproductive biology of Prawn, Crab, Bivalve and Cephalopods.
4. Food and feeding habits of different culturable fish species, Prawn, Crab, Oyster and mussels.
5. Study of fish growth-Analysis of growth checks on hard parts (Scale, Otolith, Vertebra), Cube law, Ponderal index, relative condition factor, length-weight relationship.
6. Maturity Stages, fecundity and gonadosomatic index.
7. Life cycle and developmental stages of Prawns and shrimps.
8. Endocrine glands in fish special reference to pituitary gland.

B. Freshwater fisheries.

1. Principles and site selection of various kinds of fish farm and pond designing.
2. Criteria for the selection of species for aquaculture.
3. Different systems of fish culture
   Monoculture, Polyculture, integrated fish farming, Extensive, Semi-intensive and intensive culture, Raceway culture, wastewater culture, freshwater prawn culture, freshwater pearl culture.
4. Inland fishery resources of the major river systems, lakes and reservoirs-their conservation and management.
5. Spawning habit of carps, factors affecting spawning.
6. Induced breeding of Indian Major Carps, Bundh breeding.
7. Hatchery technology for carp and prawn seed production.
8. Transportation of live fish and fish seeds.
9. Nursery and rearing pond management of carps.
10. Natural food and their importance in aquaculture. Supplementary feeding, feed formulation of fish and prawn.

C. Coastal and Marine fisheries.

1. Brackishwater fishery resources of the country. Problems and prospects of brackishwater fishery.
2. Brackishwater culture practices of Sea Perch, milk fish, mullet, shrimps.
3. Mariculture and exploitation of pearl oyster, edible oyster and mussels.
4. Marine fishery resources of India. Exploitation and management of EEZ. Problems of over fishing, conservation of marine fishery resources
5. Fisheries of oil Sardine Hilsa, Mackerel, Bombay duck, Pomfret.
6. Conventional fishing methods–Common fishing crafts and gears.

D. Fin fish and Shell fish diseases and health management.

1. Infectious diseases of fin fish–morphology, lifecycle, nature of damage. symptom, prophylaxis and treatment of the following :
   (i) Viral diseases– Viral Hemorrhagic Septicemia (VHS) Infectious Pancreatic Necrosis (IPN).
   (ii) Bacterial diseases–Dropsy, Fin rot.
   (iii) Fungal diseases–Branchiomycosis, Saprolegniosis.
   (iv) Protozoan diseases–Ichthyophthiriasis, Whirling disease.
   (v) Helminth disease–Dactylogyrosis, Gyrodactylosis.
   (vi) Custacean parasitic disease–Lernaeosis, Argulosis.
   (vii) Epizootic ulcerative syndrome
2. Infectious diseases of prawn–Pathogen, Symptoms, Prophylaxis and therapy of the following–White spot disease, Brown spot disease and Black gill disease.
3. Disease due to environmental stress and nutritional imbalance.

E. Fish genetics, Biotechnology and Microbiology

1. Hybridization, Breeding, Chromosomal manipulation–Gynogenesis, Androgenesis, Polyploidy, Transgenic fish, production of sterile and sex reversed fish. Significance in aquaculture. Cryopreservation of gametes.
2. Mechanism of fish spoilage–microbial, enzymic and chemical.
3. Biodegradation of sewage water.

F. Post harvest technology, fishery economics and extension.

1. Importance of fish preservation, Traditional and advanced methods of fish preservation, Drying Salting, Smoking, Canning, Freezing, Processing and Preservation of fish products and by–products.
2. Role of fisheries in Indian Economy, cooperatives and their importance in fish production and marketing.
3. Objectives and Principles of extension. Role of extension in Community Development.