

SRI VENKATESWARA UNIVERSITY
V SEMESTER W.E.F.2025-26
AQUACULTURE (MAJOR)

Course No.:12 - Extension, Economics & Marketing
credits :3

Course outcomes:

1. Gain Knowledge of basic concepts of economics with reference to fisheries and various factors influencing the fishery products price.
2. Know about fisheries marketing, methods of economic analysis of business organizations and preparation of project and project appraisal.
3. To know about application of economic principles to aquaculture operations.
4. Get the broad knowledge of scope and objectives, principles of fisheries extension.
5. Understand the importance of transfer technology of ICAR programmes and training at DAATT Centers and their role in education of aqua farmers through print and electronic media.

SYLLABUS

UNIT – 1 Introduction

- 1-1 Meaning and scope of economics with reference to fisheries
- 1-2 Basic concepts of economics – goods, services, wants and utility, demand and supply, value price, market demand and individual demand, elasticity of demand.
- 1-3 Theory of production, production function in fisheries
- 1-4 Various factors influencing the fishery product's price

UNIT – II Fisheries marketing

- 2-1 Basic marketing functions, consumer behavior and demand, fishery market survey and test marketing a product
- 2-2 Fish marketing – prices and price determination of fishes
- 2-3 Marketing institutions- primary(producer fishermen, fishermen cooperatives, and fisheries corporations) and secondary (merchant/agent/speculative middlemen)
- 2-4 Preparation of project and project appraisal

UNIT-III Fisheries economics

- 3-1 Aquaculture economics- application of economics principles to aquaculture operations
- 3-2 Cost and earnings of aquaculture systems – carp culture, shrimp farming systems, hatcheries, Cost and earnings of fishing units and freezing plants
- 3-3 Socio-economic conditions of fishermen in Andhra Pradesh, Role of Matsyafed and NABARD in uplifting fishermen's conditions, fishermen cooperatives
- 3-4 Contribution of fisheries to the national economy

UNIT-IV Fisheries extension

- 4-1 Fisheries extension – scope and objectives, principles and features of fisheries extension education
- 4.2 Fisheries extension methods and rural development
- 4-3 Adoption and diffusion of innovations

UNIT-V Transfer of technology

- 5-1 ICAR programs – salient features of ORP, NDS, LLP, IRDP, ITDA, KVK, FFDA, FCS, FTI, TRYSEM
- 5-2 Training – meaning, training vs. education and teaching
- 5-3 DAATT centres and their role in tot programs, video conferencing, education of farmers through print and electronic media

V SEMESTER
Course No.: 12 - Extension, Economics & Marketing
credits :1

1. Basic marketing functions
2. Prices and price determination of fishes
3. Fisheries extension
4. Education of Fish farmers
5. Field notes and necessary inputs –should be focused in the practicals

Prescribed Books:

1. Adivi Reddy sv 1997. An introduction to extension education. Oxford & IBH Co.Pvt. Ltd. New Delhi
2. Jayaraman R 1996. Fisheries Economics. Tamilnadu Veterinary and Animal Science University. Tuticorn
3. Subba Rao N 1986. Economics of Fisheries. Daya publishing house, Delhi

References:

1. Dewwett KK and Varma JD 1993. Elementary economic theory. S.chand, New Delhi
2. Korakandy R 1996. Economics of Fisheries Mangement. Daya Publishing House, Delhi
3. Tripathi SD 1992. Aquaculture Economics. Asian Fisheries Society, Mangalore.

V SEMESTER
Course No.: 13 - Ornamental Fishery
credits :3

Course outcomes:

- CO1: Gain Knowledge on Aquarium Fishes
CO2: Have Knowledge on fresh water and marine water Ornamental Fishes CO3: Have Practical knowledge on the setting up of aquarium
CO4: gain knowledge on water quality management for different types of aquariums
CO2: Apply the knowledge for self employment

SYLLABUS

UNIT I: Introduction

- 1-1 Aquarium and ornamental fishes – introduction
- 1-2 Present status of Aquarium trade in the world and India
- 1-3 Aquarium accessories – aerators, filters, lighters and heaters
- 1-4 Water quality needs and different kinds of feeds

UNIT II: Fresh water ornamental fishes

- 2-1 Live bearers, gold fish, koi, gourami, barbs and tetras, angel fish and cichlid fish
- 2-2 Brood stock development, breeding, larval rearing and grow out
- 2-3 Larval feeds and feeding

UNIT III: Marine ornamental fishes

- 3-1 Varieties and habitat of marine ornamental fishes
- 3-2 major marine ornamental fish resources of India
- 3-3 Collection and transportation of live fish, use of anaesthetics
- 3-4 Breeding of marine ornamental fish
- 3-5 Other aquarium animals – sea anemones, lobsters, worms, shrimps, octopus and starfish

UNIT IV: Aquarium management

- 4-1 Setting up fresh water, marine and reef aquariums
- 4-2 Water quality management for different types of aquariums
- 4-3 Common diseases of aquarium fish, diagnosis and treatment
- 4-4 Temperature acclimatization and oxygen packing for aquarium fish

UNIT V: Commercial production of aquarium fish and plants

- 5-1 Commercial production units of ornamental fish- requirements and design
- 5-2 Commercial production of goldfish, live bearers, gouramies, barbs, angels and tetras
- 5-3 Mass production of aquarium plants
- 5-4 Retail marketing and export of ornamental fish

V SEMESTER
Course No.: 13 - Ornamental Fishery
credits :1

PRACTICALS:

1. Study of aerators – types and structures
2. Water circulation methods in aquarium and filtration
3. Collection and identification of aquarium plants
4. Identification of common marine aquarium fishes
5. Identification of common fresh water aquarium fishes
6. Breeding of egg layers
7. Breeding of live bearers
8. Evaluation of significance of aquaria for commercial and domestic use.

PRESCRIBED BOOK(S):

1. Dick Mills 1998. Aquarium fishes, Dorling Kindersly Ltd, London
2. Van Ramshort JD 1978. The complete aquarium encyclopedia, Elsevier

REFERENCES:

1. Jameson JD and Santhanam R 1996. Manual of ornamental fishes and farming technologies, Fisheries College and research institute, Tuticorn
2. Stephen Spotte 1993. Marine aquarium keeping. John wiley and sons, USA

V SEMESTER
Course No.:14: Fishery Engineering
credits :3

Course outcomes:

- CO1:** Have knowledge on traditional, motorized and mechanized fishing crafts of India
CO2: Gain Knowledge on Design of fishing gear and fish catching methods
CO3: Learn about the type of anchors and Navigation equipment
CO4: Gain Knowledge on Remote sensing applications in fish finding and catching
CO5: Learn about the Fish Processing Equipment

SYLLABUS

UNIT I: Fishing crafts

- 1-1 Different types of fishing crafts in India- inland and marine– traditional, motorized and mechanized.
- 1-2 Classification of fishing craft.
- 1-3 Boat building materials - wood, steel, FRP, ferro-cement, aluminum etc.,
- 1-4 Mechanization of fishing craft and its impact

UNIT II: Fishing gear

- 2-2 Design of fishing gear and fish catching methods
- 2-2 Fishing accessories, Netting materials – natural and synthetic fishing gear materials and yarn numbering system
- 2.3 Active fishing gear - classification and description of modern fishing gears.- Design and operation of –trawls, purse seines, ring seines, beach / shore seine, boat seine, pole and line, squid jigs, trolling.

UNIT III: Anchors, Fish Finding & Navigational Equipment (Introductory)

- 3-1 Types of Anchors – Chains, ropes, blocks, leads and drogues
- 3-2 Echo sounders, fish finders, sonar and net sonde
- 3-3 Chronometer, gyro compass, radar, decca, omega etc.

UNIT IV: Exploration of fish and Conservation

- 4-1 Remote sensing applications in fish finding and catching
- 4-2 Turtle exclusion devices
- 4-3 By-catch reduction devices
- 4-4 Destructive and prohibited fishing practices

UNIT V: Fish Processing Equipment

- 5-1 Ice making machinery, Brine tank
- 5-2 Arrangements for leak detection
- 5-3 Operation of various freezing machinery
- 5-4 Special equipment for freeze-drying, irradiation and cryogenics

V SEMESTER
Course No.: 14 - Fishery Engineering
credits :1

PRACTICALS:

1. Site survey: preparation of site map and contour map
2. Ice making and harvesting
3. Testing different netting materials- natural and synthetic
4. Estimation of buoyancy and de-buoyancy of different floating and sinking materials
5. Designing trawl net by conducting survey
6. Solving problems on finding position of gravity, flotation and buoyancy
7. Visit to fishing harbor to study deck machinery
8. Visit to fishing harbor to study hull equipment
9. Visit to boat building yard and dry docking yard
10. Visit to a fish processing unit to study the equipment used in fish processing

PRESCRIBED BOOKS:

1. Fridman AI 1992. Calculations for fishing gear designs. FAO, USA. Fishing news books Ltd, England
2. Gerhard Klust 1982. Netting material for fishing gears. FAO, USA. Fishing news books Ltd, England
3. Jan-Olf- Traung 1992. Fishing boats of the world- Volumes – 1, 2, & 3. FAO, USA. Fishing news books Ltd, England

REFERENCES:

1. Dag Pike 1992. Fishing boats and their equipment. FAO, USA. Fishing news books Ltd, England

V SEMESTER
Course No.: 15 - Fish Processing Technology
credits :3

Course outcomes

- CO1: Understand the Principles of fish preservation
CO2: Learn about fundamental principles involved in chilling and freezing of fish and fishery products
CO3: Understand the methods of drying, smoking and freeze drying
CO4: Knowledge about packaging materials and the process of packing
CO5: gain Knowledge about the export of Fishery products from India

SYLLABUS

UNIT 1: Introduction

- 1.1 Principles of fish preservation.
- 1.2 Quality of water and ice in fish handling and processing.
- 1.3 Preparation of ice. Different types of ice used in the seafood industry and their merits.

UNIT 2: Freezing and Canning:

- 2.1 Fundamental principles involved in chilling and freezing of fish and fishery products.
- 2.2 Various freezing methods. Freezing of shrimps and fishes.
- 2.3 Changes during the cold storage of fish and fishery products.
- 2.4 Principles involved in canning of fish. Different types of containers.

UNIT 3: Drying, Smoking and Freeze-drying:

- 3.1 Different types of drying, Factors affecting drying.
- 3.2 Packing and storage of dried products. Spoilage of dried products. Preventive measures
- 3.3 Smoking of fish, Salting of fish
- 3.4 Principles of freeze drying. Accelerated freeze drying and packing of freeze dried products. Modern methods of preservation by irradiation and modified atmospheric storage.

UNIT 4: Packing, Cold Storage and Export of Fishery Products:

- 4.1 Functions of packing. Different types of packing materials and its quality evaluation.
- 4.2 Packing requirements for frozen and cured products.
- 4.3 Statutory requirements for packing.
- 4.4 Labeling requirements. Different types of cold storages, Insulated and refrigerated vehicles.

UNIT 5: Export of fishery products

- 5.1 Export of Fishery products from India - major countries, important products, export documents and procedures.
- 5.2 Prospects and constraints in export including tariff and non- tariff barriers, marine insurance, export incentives, registered exporters

V SEMESTER
Course No.: 15 - Fish Processing Technology
credits :1

Experiments:

1. Determination of moisture content in fish and fishery products
2. General description –freezing
3. Processing shrimp
4. Filleting of fish
5. Drying of fish
6. Organoleptic analysis of fish
7. Preparation of fishery by products
8. Preparation of shark fin rays fish maws, chitin, fish wafer
9. Fish pickling
10. Value added fishery products, fish curry, cutlets fish finger.
11. Preparation of surimi

Filed visit:

1. Visit to sea food pre-processing plants
2. Visit to fish processing plants

Text books:

1. K.Gopakumar, Fish Processing Technology, ICAR, New Delhi
2. T.K. Govindan, Fish Processing Technology Oxford & IBH Publication Co.
3. K.K. Balachandran Fish Canning – Principles & Practices.
4. Borgstrom, G. Fish as Food.
5. K.K. Balachandran, Postharvest Technology in Fish and Fishery Products.
6. Moorjani, M.V. Fish Processing in India.
7. Connell, J.J. Advances in Fishery science and Technology.
8. CIFT. Manual of Quality Control in Fish and Fishery Products.
9. Gopakumar, K. Fish Packaging Technology

Reference Books:

1. A.M.Martin, Fisheries – Processing Chapman & Hall, Madras
2. Ed.G.M.Hall – Fish Processing Technology Chopra & Hall. Madras.