AQUACULTURE TECHNOLOGY

COURSE OUTCOMES

BASIC PRINCIPLES OF AQUACULTURE
SEMESTER – I

THEORY

CO#	Course Outcome
CO1	Demonstrate blue revolution and classify different types of aqua culture systems (K4)
CO2	Explain the concepts of Food Chain, Food Web, Plankton and Benthos in Pond ecosystem (K3)
CO3	Categorize the different types of fish ponds such as Nursery, Rearing, Production, Stocking and Quarantine ponds. (K4)
CO4	Demonstrate different steps of Pond preparation such as site selection, Topography, Nature of the Soil, Water resources. (K3)
CO5	Illustrate the pond management factors. (K3)
CO6	Listout the Physico-Chemical conditions of soil and water. (K3)

PRACTICAL

CO#	Course Outcome
CO1	Estimatethe percentage of Carbonates, Bicarbonates in water sample. (K4)
CO2	Estimate the percentage of dissolved oxygen in the given water sample. (K4)
CO3	Demonstrate Algal bloom and their control. (K3)
CO4	Illustrate phytoplankton and Zooplankton. (K3)
CO5	Illustrate Aeration devices. (K3)
CO6	Illustrate aquatic weeds with the help of suitable diagrams. (K3)

BIOLOGY OF FIN FISH & SHELL FISH

SEMESTER – II

THEORY

CO#	Course Outcome
CO1	Classify fishes according to their Classes. (K4)
CO2	Explain the Commercial importance of Fish, Crustacean, Molluscs. (K3)
CO3	Analyze Food, Feeding and Growth mechanism of Fish. (K4)
CO4	Illustrate reproductive biology of Fishes. (K4)
CO5	Differentiate Oviparity, Viviparity, Nest building and Brooding while explaining Parental Care in Fishes. (K4)
CO6	Demonstrate Endocrine system in Fishes and moulting in Crustacean shell fish. (K3)

PRACTICAL

CO#	Course Outcome
CO1	Compare mouth parts in Herbivorous and Carnivorous fishes. (K4)
CO2	Compare digestive system of Herbivorous and Carnivorous fishes. (K4)
CO3	Estimate Length - Weight relationship of Fishes. (K4)
CO4	Outline mouth parts and appendages of Cultivable Prawns.(K4)
CO5	Diagram Crustacean larvae. (K4)
CO6	Diagram Molluscanlarvae. (K4)

FISH NUTRITION & FEED TECHNOLOGY

SEMESTER – III

THEORY

CO#	Course Outcome
CO1	Demonstrate the Requirement for protein, carbohydrates, lipids, fiber, for different types of cultivable fish and Essential Amino acid and fatty acids. (K3)
CO2	Calculate Feed conversion efficiency and feed conversion ratio. (K3)
CO3	Classify different feeds - Wet feeds, Moist feeds, dry feeds, mashes, pelleted feeds, floating and sinking pellets. (K4)
CO4	Illustrate the steps involved in feed manufacturing and storage - Steam pelleting, grinding, mixing and drying, pelleting and packing. (K4)
CO5	Distinguish between Feed attractants and Feed Stimulants. (K5)
CO6	Explain the different nutritional deficiency in Cultivable fish. (K3)

PRACTICAL

CO#	Course Outcome
CO1	Estimate carbohydrates content in Aquaculture feeds. (K4)
CO2	Calculate the percentage of Ash in Aquaculture feed. (K3)
CO3	Estimate water stability of pellet feeds. (K4)
CO4	Calculate the Nutrient percentage in feed. (K3)
CO5	Demonstrate binders used in Aquaculture feeds. (K3)
CO6	Estimate physical characteristics of floating and sinking feeds. (K4)

FRESH WATER & BRACKISHWATER AQUACULTURE

SEMESTER –IV

THEORY

CO#	Course Outcome
CO1	Analyze the scope and prospects of fresh water aquaculture in the world, India and A.P. (K4)
CO2	Categorize Different fresh water Aquaculture systems. (K4)
CO3	Illustrate Major cultivable Indian carps – Labeo, Catla and Cirrhinus& Minor carps and Composite fish culture (fish) system of Indian and exotic carps.(K3)
CO4	Explain how Air-Breathing And Cold Water Fish are cultivated. (K3)
CO5	Distinguish betweenMacrobrachiumrosenbergii and M. Malcomsoni- biology, seed production, pond preparation, stocking management of Nursery and grow out ponds, feeding harvesting. (K5)
CO6	Distinguish between Culture of P.Mondon – Hatchery technology and culture practices including feed and disease management and Culture of l-vannamei – hatchery technology and culture practices including feed and disease management. (K4)

PRACTICAL

CO#	Course Outcome
CO1	Explain thecharacteristics of important cultivable carps. (K3)
CO2	Explain thecharacteristics of important cultivable fresh water prawns. (K3)
CO3	Separate Weed fish from cultivable fish. (K4)
CO4	Classify different commercially Vible crabs and nutritional significance oysters. (K4)
CO5	Classify different types of Oysters CrossostreaMadrasensis, c.gryphoides, c.cucullata, c.rivularis, pienodanta.
CO6	Distinguish between Musssels and Clams. (K5)

FISH HEALTH MANGEMENT

PAPER - V

SEMESTER – V

THEORY

CO#	Course Outcome
CO1	Explaindifferent types of diseases. (K3)
CO2	Differentiate Neoplasm from Inflammation. (K4)
CO3	Categorize Fungal, Bacterial and Viral diseases of Fin fish. (K4)
CO4	Categorize Fungal, Bacterial and Viral diseases of Shell fish. (K4)
CO5	Illustratehow Nutritional deficiency and Environmenatl diseases occur in Fishes (K4)
CO6	Demonstrate Fish Health Management. (K3)

PRACTICAL

CO#	Course Outcome
CO1	**D**emonstrate gross pathology and external lesions of fish and prawn with reference to the common diseases in aquaculture. (K3)
CO2	Estimate pathological changes in gills and gut lumen, lymphioid organ, muscles and nerves of fishes. (K4)
CO3	Estimate pathological changes in gut lumen, hepatopancreas, lymphoid organ, muscles and nerves of prawn and shrimp. (K4)
CO4	Explain Bacterial pathogens – isolation, culture and characterization. (K3)
CO5	Demonstrate Parasites in fishes : Protozoan, Helminths, Crustaceans. (K3)

FISHERIES EXTENSION ECONOMICS & MARKETING

PAPER - VI

SEMESTER –V

THEORY

CO#	Course Outcome
CO1	Explain basic concepts of economics – goods, services, wants and utility, demand and supply, value, price, market demand and individual demand, elasticity of demand, law of diminishing marginal utility and Evaluate various factors influencing the Fishery product's price. (K3,K5)
CO2	Explain Marketing institutions – primary (Producer fishermen, fishermen cooperatives and fisheries corporations) and secondary (merchant/ agent / speculative middlemen). (K3)
CO3	Apply economics principles to aquaculture (K3)
CO4	Analyze Socio-economic conditions of fishermen in Andhra Pradesh, Role of Matsyafed and NABARD in uplifting fishermen's conditions, fishermen cooperatives. (K4)
CO5	Demonstrate Fisheries extension – Scope and objectives and features of fisheries extension education and extension methods and rural development. (K3)
CO6	Explain ICAR programs related to Aquaculture like ORP,NDS,LLP,IRDP,ITDA,KVK,FFDA,FCS,FTI,TRYSEM. **(K3)**

PRACTICAL

CO#	Course Outcome
CO1	Analyze the scope and limitations of dry fish markets in and around Narsapur.(K4)
CO2	Compare price variations of fresh water fish markets in and around Narsapur.(K4)
CO3	Assess Socio - Economic conditions of fishermen. (K5)
CO4	Compare market price of different species. (K4)
CO5	Asses the Socio – economic conditions of fishermen during fishing holiday/Ban period.(K5)
CO6	Analyze the factors that influence supply and demand of marine fishery. (K4)

FISHERY ENGINEERING

SEMESTER –VI

THEORY

CO#	Course Outcome
CO1	Classify different types of fishing crafts in India – inland and marine – traditional, motorized and mechanized in India.(K4)
CO2	Classify different types of netting materials. (K4)
CO3	Demonstrate Evolution of fishing methods and gear – principles and design of fishing gear and fish catching methods.(K3)
CO4	Classify different types of Anchors used in Fishing.(K4)
CO5	Discuss about various Navigation and Remote sensing methods in fish finding and catching. (K2)
CO6	Discuss about Fish processing procedure.(K2)
CO7	Practice the Remote sensing applications in fish finding and catching.(K3)

PRACTICAL

CO#	Course Outcome
CO1	Estimate buoyancy and de-buoyancy of different floating and sinking materials. (K4)
CO2	Illustrate different netting materials - natural & synthetic.(K3)
CO3	Demonstrate deck machinery in fishing harbour. (K3)
CO4	Demonstrate fish harbour to study hull equipment. (K3)
CO5	Discuss about boat building yard and dry docking yard. (K2)
CO6	Explain fish processing unit and the equipment used in fish processing. (K3)