

BSc IN FISHERY SCIENCE

Programme Specific Outcomes	
PSO 1.	Acquire knowledge on <ul style="list-style-type: none"> • To identify fishes and understand biology of fishes. • Use of different taxonomical methods in fish identification • To dissect different organs of fishes
PSO 2.	Acquire knowledge on <ul style="list-style-type: none"> • The different aquatic ecosystems with their physico-chemical and biological characteristics. • The impact of aquatic pollution on the aquatic biota • The type and diversity of plankton
PSO 3.	Acquire knowledge on <ul style="list-style-type: none"> • The different types of capture fisheries, their importance and scope in fish production. • Fish population dynamics and importance of statistics and their application in fisheries • Estuarine and marine ecosystem along with their fisheries.
PSO 4.	Acquire knowledge on <ul style="list-style-type: none"> • The concept and prospect of aquaculture and its present status in the south east Asian Countries • Different types of aquaculture practices • Fish farm construction and management
PSO 5.	Acquire knowledge on <ul style="list-style-type: none"> • Different types of fishing crafts and gears in India • Different types post-harvest technologies used for fish preservation • basic microbiology and fish diseases and its control measures • Fisheries Extension Education and its application in rural areas. • Role of fisheries institutes in India in the development of fisheries sector • Biochemistry, physiology and endocrinology of fish • Applied fish genetics
PSO 6.	Acquire knowledge on <ul style="list-style-type: none"> • Modern aqua cultural practices • Fish nutrition • Sewage fed fisheries • Culture of air breathing fishes • Brackish water aquaculture and mariculture • Ornamental fishes of India and scope of breeding • Fish reproduction and breeding

	<ul style="list-style-type: none">• Developmental biology <p>Induce breeding of carps/air-breathing fishes and hatchery management</p>
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Course out comes:

Fish Biology and
Taxonomy
CO 1

Learn the basics on fish and shell fish taxonomy and systematics.
Learn the fish morphology and anatomy.
Understand classification of fish, prawn and molluscs.
Learn fish identification, fish dissection and age determination techniques,
Learn the poison gland, electric organ, bioluminescence

Aquatic Ecology
CO 2

Learn the various aquatic ecosystems viz., fresh water, brackish water and marine water ecosystem.
Understand the ecological difference of lotic and lentic ecosystems and benthic communities of lotic system.
Understand biogeochemical cycles, Physico-Chemical Characteristics of Water and their interrelationship.
Learn the ocean currents, wave, tide and its importance on fisheries.
Students will learn the trophic dynamics, eutrophication, food chain and biological productivity of aquatic ecosystems.
To make them to learn the various types of aquatic pollution and control measures, concepts of bio-monitoring with special reference to aquatic biota.

Capture Fisheries
CO 3

Learn qualitative and quantitative analysis of plankton
Students will learn the types and characteristics of capture fisheries, riverine fisheries of India, important cold water fishes and fisheries and seed resources.
To make the students understand the wetland and reservoir fisheries with reference to fish diversity and ecology.
Learn the marine and estuarine ecosystem, marine zonation, Economic Exclusive Zones.
To make the students understand fish population dynamics, marking and tagging of fishes.
Student will able to understand differentiate between the mean, median and mode of the data.
Learn the measures of central tendencies, measures of dispersions, correlations and regressions.
Students will be able to identify different aquatic ecosystems like wet land, riverine, reservoir ecosystem through exposure visit.

Aquaculture
CO 4

To improve the knowledge and technical skills to identification of cultivable fin fish and shell fish.
To make the students understand history of aquaculture, aquaculture practices classification of aquaculture based on management intensity salinity of water and water temperature.
Students learn the different fish culture technologies and its economics namely composite fish culture, integrated fish farming.
Design aquaculture ponds and management of water quality to provide best quality environment to fishes.

Fish Technology,
Pathology and
Extension
Education
CO 5

Learn control of predatory aquatic insects and aquatic weeds in the aquaculture facilities.

Learn estimation of primary productivity and identification of predatory aquatic insects and aquatic macrophytes.

Students will be able to understand the fishing gears and craft used in different parts of India.

Students will be able to understand technologies of postharvest technology like icing, drying, smoking, freezing, canning and its role in providing better quality produce to the consumer.

Students learn the different fish by-products and value added products.

Understand the different types of microbes *viz*, bacteria, virus, fungi, protozoa. Learn the classification of bacteria based on temperature and oxygen requirement.

Learn the concept of bacterial growth curve and gram staining technique.

Students learn diagnose and manage aquaculture diseases *viz* bacterial, fungal, protozoan, viral, crustacean parasitic diseases, nutritional and environmental diseases. Learn to manage health and prevention issues in aquaculture facilities.

Students will be able to understand the concept of extension education, programme planning, communication models, PRA technique and importance leadership development in rural area.

Students will understand important fisheries institutes of India and role in development of fisheries sector.

Learn whole mount preparation of fish parasites, preparation of Histology of fish tissues (liver, intestine and gonads), Preparation of bacterial smears and identification of bacterial strains and Preparation of interview schedule/questionnaires for village survey.

Students will acquire the knowledge about the fish physiology and biochemistry and their significance.

Learn about the Enzymes, its nature, classification and regulation, Glycolysis, TCA cycle, and lipid metabolism.

Students will understand digestion in fish, gas exchange across the gills, effects of various factors in gas exchange and osmoregulation in fresh water, brackish water and marine fishes.

Understand the basics of Blood Composition, haemoglobin, circulation of fish and excretion process.

Fish Physiology,
Biochemistry and
Applied Genetics
CO 6

<p>Advanced Aquaculture CO 7</p>	<p>Learn about structure and function of major endocrine glands in fishes.</p>
	<p>Understand the importance of conservation of fish genetic resources and different methods of conservation.</p>
	<p>Learn in-situ and ex-situ methods viz. live gene bank, cryopreservation.</p>
	<p>Understand applied aquaculture genetics and different fish stock improvement techniques i.e. selective breeding, chromosome manipulation, transgenic fish.</p>
	<p>Learn counting of RBC, WBC and preparation of haemin crystals of fish blood.</p>
	<p>Learn analysis and estimation of protein and carbohydrates in fish.</p>
	<p>Learn preparation of fish chromosome slide.</p>
	<p>Understand the cage and pen culture, Raceways. Trout farming: design and management of a trout farm. Rearing of game and larvicidal fishes.</p>
	<p>To understand the different type feeds and feeding methods in fin fish farming.</p>
	<p>Understand feed preparation</p>
<p>To understand the common feed ingredients used in aquaculture.</p>	
<p>Acquire knowledge of brood fish and larval nutrition.</p>	
<p>Understand importance of Sewage-fed Fisheries and air breathing culture,</p>	
<p>Learn brackish water and mariculture techniques.</p>	
<p>Learn the identification and classification of indigenous and exotic ornamental fishes and culture techniques.</p>	
<p>Gaining the knowledge and technical skills identification of live feed.</p>	
<p>Learn aquarium setting and maintenance of home aquarium</p>	
<p>Fish Breeding and Hatchery Management CO 8</p>	<p>Students will be able to understand the types of reproduction, sexual dimorphism, courtship and spawning behaviour. Parental care, migration of fishes.</p>
	<p>Learn the breeding cycles, fecundity and gonado-somatic Index. Maturation of gonads, gametogenesis of fish.</p>
	<p>Understand the Embryonic and larval development fin fish.</p>
	<p>Gain knowledge about natural sources of fish seed, advantages and disadvantages of natural sources.</p>
	<p>Deep understanding of induce breeding of carps and air breathing fish.</p>

Learn selection criteria brood fish and technical skills of hypophysation techniques.

Understand management of brood stock management.

Learn use of hormone of pituitary gland extract/synthetic hormone in inducing carps.

Understand wet and dry bundh methods of carp breeding.

Learn the different types of hatchery used to breed fishes.

Learn designing of eco-hatchery and also operation procedure of eco-hatchery.

Learn the of post larval development of fish from permanent slide.

Learn estimation of physico-chemical parameters of hatchery water.