ST. ALBERT'S COLLEGE (AUTONOMOUS)

ERNAKULAM

An initiative of the Archdiocese of Verapoly

(Affiliated to Mahatma Gandhi University, Kottayam)

DEPARTMENT OF FISHERIES AND AQUACULTURE

PROGRAMME: B.Sc. AQUACULTURE

Programme Outcomes

Programme Specific Outcomes

Course Outcomes

PO NO.	**Programme Outcomes** **Upon completion of the B.Sc. Degree Programme, the graduate will be adept in a number of transferable, analytical and communication skills including**
PO - 1	Critical Thinking: Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
PO - 2	Problem Solving : Solve problems from the Disciplines of concern using the Knowledge, skills and attitude acquired from humanities / science / mathematics / Social Sciences etc.
PO - 3	Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.
PO - 4	Design Mindset: Represent and develop tasks and work-process for the desired. outcome

PSO NO.	**PROGRAMME SPECIFIC OUTCOMES** **On completion of the B.Sc. Industrial Fish & Fisheries program the students would be skilled in the following specific areas**
PSO - 1	Understand the basic concepts of capture, culture and management of fisheries in a sustainable method and operate the same in both the public and private sector.
PSO – 2	Understand the procedures of quality assurance of seafood products and apply the methods in processing of seafood products.
PSO – 3	Understand the basic concepts of the physiological processes of fish, its taxonomy, significance of biotechnology and its multidisciplinary nature combining genetics, microbiology, cell and molecular biology.
PSO-4	Identify and formulate technically sound, economically feasible and socially relevant fishery related projects and use of statistical tools and software for estimation of fisheries resources

SEMESTER 1

CO -PO-PSO Mapping - COURSE NAME: BIOLOGY OF FISHES

COURSE TITLE	**BIOLOGY OF FISHES**		
COURSE CODE	**AQU02 - AQU1CRT0119**		
CO No.	**Course Outcomes**	**POs / PSOs Addressed**	**Cognitive Level**
CO - 1	Outline the organismal form, function and diversity	PO1, PSO 3	U
CO - 2	Explain the foundational concepts of physiological processes of fish	PO1, PSO 3	U
CO - 3	Determine the length-weight relationship to indicate the taxonomic differences and events in the life history of fish.	PO 2, PSO 3	AP
CO - 4	Summarize the mechanism of sense organs in crustaceans and molluscs in detecting the different range of stimuli.	PO1, PSO 3	U
CO - 5	Explain the reproductive process in fish and crustaceans	PO1, PSO3	U

	PO1	**PO2**	**PO3**	**PO4**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
CO1	**2**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO2	**2**	**-**		**-**	**-**	**-**	**2**	**-**
CO3	**-**	**1**	**-**	**-**	**-**	**-**	**1**	**-**
CO4	**1**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO5	**2**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
AVG CO	**1.75**	**1**	**-**	**-**	**-**	**-**	**1.6**	**-**

CO -PO-PSO Mapping - COURSE NAME: FINFISH AND SHELLFISH TAXONOMY

COURSE TITLE	FINFISH AND SHELLFISH TAXONOMY		
COURSE CODE	**AQU02 - AQU1CRT0219**		
CO No.	**Course Outcomes**	**POs/PSOs Addressed**	**Cognitive Level**
CO - 1	Identify candidate species of fin fishes and shell fishes which are used for successful aquaculture practices.	PO 1, PSO 3	U
CO - 2	Generalize the techniques behind collection, preservation, identification, naming and documentation of new organisms.	PO 1, PSO 3	U
C.O - 3	Explain the relationship between organisms at different taxonomic levels.	PO 1, PSO 3	AN
CO - 4	Apply different taxonomic and systematic laws for describing a species.	PO 1, PSO 3	AP
CO - 5	Differentiate the taxonomic characteristics of molluscs and crustaceans.	PO 1, PSO 3	U

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	**2**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO2	**2**	**-**		**-**	**-**	**-**	**2**	**-**
CO3	**1**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO4	**1**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO5	**1**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
AVG CO	**1.4**	**-**	**-**	**-**	**-**	**-**	**1.6**	**-**

CO -PO-PSO Mapping - COURSE NAME: FRESHWATER AQUACULTURE

COURSE TITLE	FRESHWATER AQUACULTURE		
COURSE CODE	**AQU02 - AQU1CRT0319**		
CO No.	**Course Outcomes**	**POs /PSOs Addressed**	**Cognitive Level**
CO - 1	Identify the different forms of freshwaters and list the freshwater fish species being cultured and potential species of India.	PO 1, PSO 1	U
CO - 2	Relate the different types of rearing processes and the different steps and procedures involved in the preparation and management of nursery and rearing systems of fish culture.	PO 1, PO 2 PSO 1	U
CO - 3	Demonstrate the pre-stocking pond preparation steps such as drying, ploughing, liming, and manuring and fertilization and proper procedures for grow out.	PO2, PSO 1	U
CO - 4	Explain the biology and feeding habits of cultivable carps and types of carp farming systems.	PO 2, PSO 3	U
CO - 5	Summarize the different systems of aquaculture including recent techniques like aquaponics and re circulatory aquaculture systems.	PO 2, PSO 1	U

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	2	-	-	-	2	-	-	-
CO2	1	2	-	-	2	-	-	-
CO3	-	2	-	-	2	-	-	-
CO4	-	2	-	-	-	-	1	-
CO5	-	1	-	-	2	-	-	-
AVG CO	1.5	1.75	-	-	2	-	1	-

CO -PO-PSO Mapping - COURSE NAME: TAXONOMY, FISHERY BIOLOGY AND FRESHWATER AQUACULTURE (P)

COURSE TITLE	**TAXONOMY, FISHERY BIOLOGY AND FRESHWATER AQUACULTURE**		
COURSE CODE	**AQU02 - AQU1CRP0119**		
CO No.	**Course Outcomes**	**POs /PSOs Addressed**	**Cognitive Level**
CO - 1	Identify the different taxonomic groups up to the family level based on the morphological features	PO1 / PSO 3	U
CO - 2	Identify and distinguish the larval forms of Penaeids and non-Penaeids	PO1/ PSO 3	U
CO - 3	Estimate the Gonadosomatic Index in assessing the maturity stages of fish	PO2/ PSO 3	AP
CO - 4	Estimate the Gastrosomatic Index in assessing the feeding habits of fish	PO2/ PSO3	AP
CO - 5	Demonstrate the installation of Aquaponics system	PO1, PO4/ PSO1	AP

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	**2**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO2	**2**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO3	**-**	**1**	**-**	**-**	**-**	**-**	**2**	**-**
CO4	**-**	**1**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	**2**	**-**	**-**	**1**	**2**	**-**	**-**	**-**
AVG CO	**2**	**1**	**-**	**1**	**2**	**-**	**1.5**	**-**

SEMESTER II

CO -PO-PSO Mapping - COURSE NAME: AQUATIC ECOLOGY

COURSE TITLE	AQUATIC ECOLOGY		
COURSE CODE	**AQU02 – AQU2CRT0119**		
CO No.	**Course Outcomes**	**POs/PSOs Addressed**	**Cognitive Level**
CO - 1	Summarize how aquatic organisms and water quality is affected by the physical, chemical and biological conditions of the water and how it impacts aquatic environments	PO 3, PSO 1	U
CO - 2	Explain the dependence of all organisms on one another and how energy and matter flow within an aquatic ecosystem.	PO 3, PSO 1	U
CO - 3	Comprehend the benefits and ecological functions and values of riparian zones, wetlands and open water systems and be able to identify the associated zone areas.	PO 3, PSO 1	AN
CO - 4	Identify the major forms of life in the sea, describe the characteristics that distinguish these forms, and describe how these forms relate to each other ecologically.	PO 3, PSO 1	U
CO – 5	Infer the issues related to the management and development of fisheries of the major river systems.	PO 3, PSO 1	U

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	-	-	**2**	-	**2**	-	-	-
CO2	-	-	**1**	-	**1**	-	-	-
CO3	-	-	**1**	-	**1**	-	-	-
CO4	-	-	**1**	-	**1**	-	-	-
CO5	-	-	**2**	-	**2**	-	-	-
AVG CO	-	-	**1.4**	-	**1.4**	-	-	-

CO -PO-PSO Mapping - COURSE NAME: FISHING TECHNOLOGY

COURSE TITLE	FISHING TECHNOLOGY		
COURSE CODE	**AQU02 – AQU2CRT0219**		
CO No.	**Course Outcomes**	**POs/PSOs Addressed**	**Cognitive Level**
CO - 1	Explain how the fishing craft has been developed from the ancient time, different types of powers used for propulsion of fishing craft, limitations of indigenous craft and advantages of mechanized craft.	PO1 / PSO1	U
CO - 2	Identify the fishing craft with respect to various factors such as depth of operation, size of the vessel and duration of voyage etc.	PO1 / PSO1	U
CO - 3	Classify the traditional fishing crafts of different states of India and mechanization of fishing craft.	PO1 / PSO1	U
CO - 4	Explain the process of seasoning of wood, preservation of wood, effect of fouling and boring organisms on wood and its prevention.	PO1 / PSO1	U
CO - 5	Classify marine engines and types; illustrate different parts of an engine.	PO1 / PSO1	U

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	**2**	-	-	-	**2**	-	-	-
CO2	**2**	-	-	-	**2**	-	-	-
CO3	**1**	-	-	-	**1**	-	-	-
CO4	**1**	-	-	-	**1**	-	-	-
CO5	**2**	-	-	-	**2**	-	-	-
AVG CO	**1.6**	-	-	-	**1.6**	-	-	-

CO -PO-PSO Mapping - COURSE NAME: BRACKISHWATER AQUACULTURE AND MARICULTURE

COURSE TITLE	BRACKISHWATER AQUACULTURE AND MARICULTURE		
COURSE CODE	**AQU02 – AQU2CRT0319**		
CO No.	**Course Outcomes**	**PO s / PSOs Addressed**	**Cognitive Level**
CO - 1	Identify the economically viable and environmentally sustainable culture technologies for finfish and shellfish.	PO 1, PO 3 PSO 1	U
CO - 2	Define economically important brackish water biological resources for their commercial utilization.	PO 1, PSO 1	U
CO - 3	Generalize the policy and planning support for socio-economic development, through environmentally sustainable, brackish water aquaculture	PO 1, PSO 1	U
CO - 4	Demonstrate human resource development and transfer of technology Programmes through training and extension and to provide consultancy services	PO 1, PSO 1	U
CO - 5	Explain the environmental implications of brackish water farms and associated social issues.	PO 1, PSO 1	U

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	**2**	-	**2**	-	**2**	-	-	-
CO2	**2**	-	-	-	**2**	-	-	-
CO3	**1**	-	-	-	**1**	-	-	-
CO4	**1**	-	-	-	**1**	-	-	-
CO5	**1**	-	-	-	**1**	-	-	-
AVG CO	**1.4**	-	**2**	-	**1.4**	-	-	-

CO -PO-PSO Mapping - COURSE NAME: AQUACTIC ECOLOGY, FISHING TECHNOLOGY AND BRACKISHWATER AQUAUCULTURE AND MARICULTURE

COURSE TITLE	AQUACTIC ECOLOGY, FISHING TECHNOLOGY AND BRACKISHWATER AQUAUCULTURE AND MARICULTURE		
COURSE CODE	**AQU02 – AQU2CRP0119**		
CO No.	**Course Outcomes**	**PO s/PSOs Addressed**	**Cognitive Level**
CO - 1	Identify commercially important brackish water and marine fishes, crustaceans and molluscs, and recognize phytoplankton and zooplanktons.	PO1, PSO1, PSO 3	U
CO - 2	Identify phytoplankton and zooplankton	PO1, PSO1, PSO 3	U
CO - 3	Describe aquatic food chain and food web.	PO 1, PO3 PSO1	U
CO – 4	Identify the different models of fishing crafts, fishing gears, and fishing accessories.	PO 1 PSO 1	U
CO - 5	Classification and identification of synthetic fibre.	PO 2 PSO 1	U

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	**2**	-	-	-	**2**	-	-	-
CO2	**2**	-	-	-	**2**	-	-	-
CO3	**1**	-	**1**	-	**1**	-	-	-
CO4	**1**	-	-	-	**1**	-	-	-
CO5	-	**1**	-	-	**1**	-	-	-
AVG CO	**1.4**	**1**	**1**	-	**1.4**	-	-	-

SEMESTER III

CO -PO-PSO Mapping - COURSE NAME: INLAND AND MARINE FISHERIES

COURSE TITLE	COURSE NAME: INLAND AND MARINE FISHERIES		
COURSE CODE	**AQU02-AQU3CRT0119**		
CO No.	**Course Outcomes**	**PO s / PSOs Addressed**	**Cognitive Level**
CO - 1	Identify the major Inland and Marine Resources of India	PO 3/ PSO 3	U
CO - 2	Generalize the problems encountered by the major water bodies.	PO 1/ PSO 1	U
CO - 3	Explain the fishery regulations and conservation of fish resources.	PO 2/ PSO 2	U
CO - 4	Identify the distribution of fish species in the major zones of ocean as well as river water basins.	PO 4/ PSO 4	U
CO - 5	Estimate fish landing using statistical methods	PO1/ PSO4	AP

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	-	-	**1**	-	-	-	**1**	-
CO2	**2**	-	-	-	**2**	-	-	-
CO3	-	**2**	-	-	-	**2**	-	-
CO4	-	-	-	**2**	-	-	-	**1**
CO5	**1**	-	-	-	-	-	-	**2**
AVG CO	**1.5**	**2**	**1**	**2**	**2**	-	**1**	**1.5**

CO -PO-PSO Mapping - COURSE NAME: BIOSTATISTICS AND COMPUTER APPLICATION

COURSE TITLE	BIOSTATISTICS AND COMPUTER APPLICATIONS		
COURSE CODE	**AQU02 – AQU3CRT0219**		
CO No.	**Course Outcomes**	**POs / PSOs Addressed**	**Cognitive Level**
CO - 1	Express to present the statistical data in order to comprehend the complicated practical filed scenarios.	PO2 PSO4	U
CO - 2	Develop measures that can be used to summarize a data set: mean, median, mode, percentiles, variance, standard deviation, and range.	PO2 PSO4	U
CO - 3	Know how to use sample data to estimate a population mean, a population variance, and a population proportion and know how to compute point and interval estimates of the population parameters.	PO1, PO2 PSO4	U
CO - 4	Utilize computer based data presentation and analytical tools to perform various numerical data process on Microsoft office.	PO2 PSO4	U
CO - 5	Estimation of total marine fish landings.	PO2 PSO4	AP

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	-	**1**	-	-	-	-	-	**1**
CO2	-	**2**	-	-	-	-	-	**2**
CO3	**2**	**2**	-	-	-	-	-	**2**
CO4	-	**1**	-	-	-	-	-	**1**
CO5	-	**1**	-	-	-	-	-	**1**
AVG CO	**2**	**1.4**	-	-	-	-	-	**1.4**

CO -PO-PSO Mapping - COURSE NAME: AQUACULTURE NUTRITION

COURSE TITLE	AQUACULTURE NUTRITION		
COURSE CODE	**AQU02 – AQU3CRT0319**		
CO No.	**Course Outcomes**	**POs / PSOs Addressed**	**Cognitive Level**
CO - 1	Explain the feed manufacturing procedure, equipment, feed transport and feed storage.	PO1, PS01	U
CO - 2	Illustrate feed formulation techniques for the manufacture of nutritionally balanced feed.	PO1, PSO1	AP
CO - 3	Identify the phytoplankton and zooplankton as fish food organisms and their culture techniques.	PO1, PSO1	U
CO – 4	Enumerate the different types of fish feed ingredients and feed additives used in fish feed	PO1, PSO1	AP
CO - 5	Assess the quality standards of fish/shrimp feeds.	PO1, PSO 1	AP

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	**2**	-	-	-	**2**	-	-	-
CO2	**2**	-	-	-	**2**	-	-	-
CO3	**2**	-	-	-	**3**	-	-	-
CO4	**2**	-	-	-	**1**	-	-	-
CO5	**2**	-	-	-	**1**	-	-	-
AVG CO	**2**	-	-	-	**1.8**	-	-	-

CO -PO-PSO Mapping - COURSE NAME: BIOSTATISTICS AND COMPUTER APPLICATION (P)

COURSE TITLE	BIOSTATISTICS AND COMPUTER APPLICATIONS		
COURSE CODE	**AQU02 – AQU3CRP0119**		
CO No.	**Course Outcomes**	**POs / PSOs Addressed**	**Cognitive Level**
CO - 1	Apply to present the statistical data in order to comprehend the complicated practical filed scenarios and compute complex statistical analyses to handle a variety of practical problems using modern statistical techniques.	PO2, PSO4	AP
CO - 2	Calculate data set: mean, median, mode, percentiles, variance, standard deviation, range and correlation, construct the graphical representation of data.	PO2, PSO4	AP
CO - 3	Operate various numerical data process on Microsoft office and identify various computer input and output devices.	PO1, PSO4	U
CO - 4	Detect information and collect data on fisheries by online database	PO2, PSO4	AP
CO - 5	Estimation of total marine fish landings	PO 1, PSO 4	AP

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	-	**2**	-	-	-	-	-	**2**
CO2	-	**2**	-	-	-	-	-	**2**
CO3	**2**	-	-	-	-	-	-	**2**
CO4	-	**1**	-	-	-	-	-	**1**
CO5	**2**	-	-	-	-	-	-	**3**
AVG CO	**2**	**1.66**	-	-	-	-	-	**2**

CO -PO-PSO Mapping - COURSE NAME: FRESHWATER HATCHERY TRAINING

COURSE TITLE	FRESHWATER HATCHERY TRAINING		
COURSE CODE	**AQU03 – AQU3CRP0219**		
CO No.	**Course Outcomes**	**POs / PSOs Addressed**	**Cognitive Level**
CO - 1	Take part in training of breeding and rearing of freshwater fish.	PO 2/ PSO 2	AP
CO - 2	Develop sufficient professional knowledge in fish hatchery to start own enterprise.	PO 4/ PSO 1 & PSO 2	AP

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	-	**3**	-	-	-	**3**	-	-
CO2	-	-	-	**3**	**1**	**3**	-	-
AVG CO	-	**3**	-	**3**	**1**	**3**	-	-

SEMESTER IV

CO -PO-PSO Mapping - COURSE NAME: GENETICS AND BIOTECHNOLOGY

COURSE TITLE	GENETICS AND BIOTECHNOLOGY		
COURSE CODE	**AQU02 – AQU4CRT0119**		
CO No.	**Course Outcomes**	**POs / PSOs Addressed**	**Cognitive Level**
CO - 1	Demonstrate understanding on the fundamentals of genetics and fish genetics.	PO 1, PSO 1 PSO 3	U
CO - 2	Explain molecular techniques and various gene manipulation techniques so that they could cater to the needs of the aquaculture sector and equip themselves with the current advanced technologies for their future career development.	PO 1, PSO 1 PSO 3	U
CO - 3	Compare various hybridization techniques and list the methods of sex determination in fish.	PO 1, PSO 3	U
CO - 4	Explain the applications of biotechnology in aquaculture, pharmaceutical and industrial field.	PO 1, PSO 1 PSO 3	U
CO - 5	Develop knowledge for the fast developing modifications in both fisheries and aquaculture.	PO 1, PSO 3	AP

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	**2**	-	-	-	**2**	-	**2**	-
CO2	**2**	-	-	-	**1**	-	**2**	-
CO3	**2**	-	-	-	-	-	**2**	-
CO4	**1**	-	-	-	**1**		**1**	-
CO5	**3**	-	-	-	-	-	**2**	-
AVG CO	**2**	-	-	-	**1**	-	**1.8**	-

CO -PO-PSO Mapping - COURSE NAME: PATHOLOGY IN AQUACULTURE

COURSE TITLE	PATHOLOGY IN AQUACULTURE		
COURSE CODE	**AQU02 – AQU4CRT0219**		
CO No.	**Course Outcomes**	**POs / PSOs Addressed**	**Cognitive Level**
CO - 1	Outline the major diseases associated with farming practices.	PO 1/ PSO 1	U
CO - 2	Develop knowledge on disease management tools.	PO 2/ PSO 3	U
CO - 3	Identify the pathogenic virus, bacterial, protozoans and parasites in aquaculture.	PO 2/ PSO 3	U
CO - 4	Explain the ecological impact of disease in aquatic environment.	PO 3/ PSO 3	U
CO - 5	Compare traditional and new molecular approaches to disease diagnosis.	PO 1/PSO 3	U

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	**2**	-	-	-	**2**	-	-	-
CO2	-	**2**	-	-	-	-	**2**	-
CO3	-	**2**	-	-	-	-	**2**	-
CO4	-	-	**1**	-	-	-	**1**	-
CO5	**1**	-	-	-	-	-	**2**	-
AVG CO	**1.5**	**2**	**1**	-	**2**	-	**1.75**	-

CO -PO-PSO Mapping - COURSE NAME: AQUARICULTURE

COURSE TITLE	AQUARICULTURE		
COURSE CODE	**AQU02 – AQU4CRT0319**		
CO No.	**Course Outcomes**	**POs / PSOs Addressed**	**Cognitive Level**
CO - 1	Demonstrate the design and construction of home and public aquaria	PO 1, PSO 1	U
CO - 2	Explain setting and maintaining aquariums in addition to water quality management.	PO 2, PSO 1	U
CO - 3	Outline the handling and transport of aquarium fishes for trade and research purposes.	PO 1, PSO 1	U
CO - 4	Demonstrate the breeding, larval rearing and health management of freshwater ornamental fishes.	PO 1, PSO 1 PSO 3	U
CO - 5	Develop technical know-how for ornamental fish nutrition and disease management.	PO 1, PSO 1 PSO 3	AP

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	**2**	-	-	-	**2**	-	-	-
CO2	-	**2**	-	-	**2**	-	-	-
CO3	**2**	-	-	-	**2**	-	-	-
CO4	**2**	-	-	-	**2**	-	**1**	-
CO5	**1**	-	-	-	**1**	-	**1**	-
AVG CO	**1.75**	**2**			**1.8**		**1**	

CO -PO-PSO Mapping - COURSE NAME: BREEDING AND REARING OF AQUARIUM FISHES (P)

COURSE TITLE	BREEDING AND REARING OF AQUARIUM FISHES		
COURSE CODE	**AQU02 – AQU4CRP0119**		
CO No.	**Course Outcomes**	**POs / PSOs Addressed**	**Cognitive Level**
CO - 1	Identify fresh water and marine ornamental fishes, invertebrates and plants.	PO 1, PSO 1	U
CO - 2	Demonstrate the breeding and seed production of ornamental fishes.	PO 1, PSO 1 PSO3	U
CO - 3	Explain the concept of aquarium setting and maintenance.	PO 1, PSO 1	AP
CO - 4	Assess and maintain water quality and regular check on water quality parameters.	PO 1, PSO 1	U
CO - 5	Explain aquarium plant rearing and propagation and the role of aquarium plants in maintaining water quality in aquarium.	PO 1, PSO 1	U

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	**2**	-	-	-	**2**	-	-	-
CO2	**2**	-	-	-	**2**	-	**2**	-
CO3	**2**	-	-	-	**2**	-	-	-
CO4	**2**	-	-	-	**2**	-	-	-
CO5	**2**	-	-	-	**2**	-	-	-
AVG CO	**2**	-	-	-	**2**	-	**2**	-

CO -PO-PSO Mapping - COURSE NAME: LARVAL NUTRITION AND CULTURE OF FISH FOOD ORGANISMS

COURSE TITLE	LARVAL NUTRITION AND CULTURE OF FISH FOOD ORGANISMS		
COURSE CODE	**AQU02 – AQU5CRT0119**		
CO No.	**Course Outcomes**	**POs / PSOs Addressed**	**Cognitive Level**
CO - 1	Summarize the preparation, processing, formulation and proximate composition of feed.	PO 2, PSO 1 PSO 3	U
CO - 2	Assess various aspects related to physical properties of feed such as sinking velocity, bulk density, water absorption etc.	PO 1, PSO 1	U
CO - 3	Explain the culture of phytoplankton and zooplanktons.	PO 1, PSO 1	U
CO - 4	Indicate importance of the storage and feeding of live feeds.	PO 1, PSO 1	U
CO - 5	Describe the culture of artemia and periphyton.	PO 1, PSO 1	U

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	-	**2**	-	-	**2**	-	**2**	-
CO2	**2**	-	-	-	**2**	-	-	-
CO3	**2**	-	-	-	**2**	-	-	-
CO4	**2**	-	-	-	**2**	-	-	-
CO5	**2**	-	-	-	**2**	-	-	-
AVG CO	**2**	**2**	-	-	**2**	-	**2**	-

CO -PO-PSO Mapping Fishery Microbiology

COURSE TITLE	Fishery Microbiology		
COURSE CODE	**AQU02 – AQU5CRT0119**		
CO No.	**Course Outcome**	**POs / PSOs Addressed**	**Cognitive Level**
CO - 1	Explain the significance and incidence of microorganisms in fishery environment.	PO 1/ PSO 3	U
CO - 2	Identify different culture techniques and methods adopted in microbiology	PO 1/PSO 3	U
CO - 3	Describe the characteristics of food born and spoilage causing microorganism in fishery products.	PO 1/ PSO 3	U
CO - 4	Develop basic knowledge on the general principles of microbiology techniques.	PO 1/ PSO 3	U
CO - 5	Illustrate the life cycle of bacteriophage.	PO 1/ PSO 3	U

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	**2**	-	-	-	-	-	**2**	-
CO2	**2**	-	-	-	-	-	**2**	-
CO3	**2**	-	-	-	-	-	**2**	-
CO4	**2**	-	-	-	-	-	**2**	-
CO5	**2**	-	-	-	-	-	**2**	-
AVG CO	**2**	-	-	-	-	-	**2**	-

CO -PO-PSO Mapping - COURSE NAME: FISHERY MICROBIOLOGY AND PATHOLOGY (P)

COURSE TITLE	FISHERY MICROBIOLOGY AND PATHOLOGY		
COURSE CODE	**AQU01- AQU5COC0119**		
CO NO.	**Course outcome**	**POs / PSOs addressed**	**Cognitive Level**
CO-1	Illustrate the standard lab safety protocols and procedures	PO 4, PSO 3	AP
CO-2	Understand the practical skills in microscopy, their handling techniques and staining procedures.	PO 4, PSO 1	U
CO-3	Describe the total plate count and most probable number method to determine the quality of seafood.	PO 4, PSO 2 PSO 3	AP
CO-4	Explain the prophylactic and therapeutic measures including remedies with nutraceutical and immunostimulant formulations for the control of fish and shellfish diseases	PO 2, PO 3 PSO 3	U
CO 5	Illustrate the use of basic microbiological methods for the evaluation of the microbial load in the fish samples and water samples	PO 1, PSO 2 PSO 3	AP

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	-	-	-	**2**	**2**	-	-	-
CO2	-	-	-	**2**	**2**	-	**2**	-
CO3	-	-	-	**2**	**2**	-	-	-
CO4	-	**2**	-	-	**2**	-	-	-
CO5	**2**	-	-	-	**2**	-	-	-
AVG CO	**2**	**2**	-	**2**	**2**	-	**2**	-

CO -PO-PSO Mapping – AQUAFARM MANAGEMENT (P)

COURSE TITLE	AQUA FARM MANAGEMENT		
COURSE CODE	**AQU02 – AQU5CRP0219**		
CO No.	**Course outcome**	**POs / PSOs Addressed**	**Cognitive Level**
CO - 1	Ability to identify various commercially important shell fishes and fin fishes by using morphological characters	PO 1, PSO 1	U
CO - 2	Expertise in plankton identification methods.	PO 1, PSO 1	U
CO - 3	Mastery on hatchery operation and familiarity with equipment operation	PO 1, PSO 1	AP
CO - 4	Calculating nutrient requirement in feed formulation using standardized methods	PO 1, PSO 1	U
CO – 5	Ability to identify different live feed organisms.	PO 1, PSO 1	AP

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	**2**	-	-	-	**2**	-	-	-
CO2	**2**	-	-	-	**2**	-	-	-
CO3	**1**	-	-	-	**2**	-	-	-
CO4	**2**	-	-	-	**2**	-	-	-
CO5	**2**	-	-	-	**2**	-	-	-
AVG CO	**1.8**	-	-	-	**2**	-	-	-

CO -PO-PSO Mapping – ON THE JOB TRAINING

COURSE TITLE	ON THE JOB TRAINING		
COURSE CODE	**AQU03 – PAQ4OJT0119**		
CO No.	**Course Outcomes**	**POs / PSOs Addressed**	**Cognitive Level**
CO - 1	Take part in the training of fish processing techniques and build technical knowledge in post-harvest technology.	PO 2/PSO 4	AP
CO - 2	Apply information and practical experience in quality check of fishery products.	PO 2/PSO 4	AP

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	-	**2**	-	-	-	-	-	**3**
CO2	-	**2**	-	-	-	-	-	**3**
AVG CO	-	**2**	-	-	-	-	-	**3**

SEMESTER VI

CO –PO-PSO Mapping – COURSE NAME: AQUACULTURE MANAGEMENT

COURSE TITLE	AQUACULTURE MANAGEMENT		
COURSE CODE	**AQU01 – AQU6CRT0119**		
CO No.	**Course outcome**	**POs / PSOs addressed**	**Cognitive Level**
CO-1	Explain and describe trends in fisheries statistics at a global, Indian and state level.	PO 1, PSO 1	U
CO-2	Define the newly acquired terms and concepts related to fisheries and fisheries management to communicate and prepare data on fisheries and their management for fisherman community.	PO 1, PO 2 PSO 1	U
CO-3	Explain and compare different approaches, techniques and measures employed to manage fish stocks in sustainable manner	PO 1, PO 3 PSO 1	U
CO-4	Knowledge on fisheries management systems including policies, legislation, strategies, plan of management and international agreements	PO 1, PSO 1	U
CO-5	Discuss and justify the use of various types of knowledge and sources of information applied in the decision-making processes of fisheries management.	PO 1, PO 3 PSO 1	AP

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	**2**	-	-	-	**2**	-	-	-
CO2	**2**	**1**	-	-	**2**	-	-	-
CO3	**1**	-	**2**	-	**2**	-	-	-
CO4	**2**	**2**	-	-	**2**	-	-	-
CO5	**2**	-	**2**	-	**2**	-	-	-
AVG CO	**1.8**	-	-	-	**2**	-	-	-

CO -PO-PSO Mapping - COURSE NAME: AQUACULTURE ENGINEERING

COURSE TITLE	AQUACULTURE ENGINEERING		
COURSE CODE	**AQU01 – AQU6CRT0219**		
CO no.	**Course outcome**	**POs / PSOs addressed**	**Cognitive Level**
CO-1	Knowledge on the basic concepts of farm designing and explain recent trends in aquaculture engineering.	PO 1, PO 8 PSO 1	U
CO-2	Explain site selection, construction and design of tanks, ponds, cages and hatcheries.	PO 8, PSO 1	U, AP
CO-3	List the equipments used for water treatment in farms and processes of disinfection.	PO 8, PSO 1	U
CO-4	Understand the design and fabrication of different types of aerators used in aquaculture farms.	PO 8, PSO 1	U
CO-5	List different types of feeding equipments, feed control systems and instruments for measuring water quality.	PO 8, PSO 1	U

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	**2**	-	-	**1**	**2**	-	-	-
CO2	-	-	-	**2**	**2**	-	-	-
CO3	-	-	-	**2**	**2**	-	-	-
CO4	-	-	-	**2**	**2**	-	-	-
CO5	-	-	-	**2**	**2**	-	-	-
AVG CO	**2**	-	-	**1.8**	**2**	-	-	-

CO -PO-PSO Mapping - COURSE NAME: FISHERIES ECONOMICS AND EXTENSION

COURSE TITLE	FISHERIES ECONOMICS AND EXTENSION		
COURSE CODE	**AQU01- AQU6CRT0319**		
CO NO.	**Course outcome**	**POs / PSOs addressed**	**Cognitive Level**
CO-1	Knowledge on the basic concepts of economics including the theories of production and the factors influencing pricing of a product.	PO 1, PSO 4	U
CO-2	Explain different types of business and economic systems in operation.	PO 1, PO 2 PSO 4	U, AP
CO-3	Illustrate the students about markets and consumer behaviour, supply chain and methods of economic analysis in business and aquaculture operations to find profit and loss in long term.	PO 2, PSO 4	U, AP, R
CO-4	Explain about various fisheries cooperatives and institutions including the extension activities carried out by the institutions.	PO 1, PO 2 PSO 4	U
CO-5	Extend the ideas towards planning for fisheries development in the country	PO 8, PSO 1 PSO 4	U

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	**1**	-	-	-	-	-	-	**2**
CO2	**2**	**2**	-	-	-	-	-	**2**
CO3	-	**1**	-	-	-	-	-	**2**
CO4	**2**	**1**		-	-	-	-	**2**
CO5	-	-	-	**2**	**2**	-	-	**2**
AVG CO	**1.66**	**1.33**	-	**2**	**2**	-	-	**2**

CO -PO-PSO Mapping - COURSE NAME: AQUACULTURE AND MANAGEMENT OF ECOSYSTEM

COURSE TITLE	AQUACULTURE AND MANAGEMENT OF ECOSYSTEM		
COURSE CODE	**AQU01 – AQU6CRT0419**		
CO no.	**Course outcome**	**POs / PSOs addressed**	**Cognitive Level**
CO-1	Knowledge on ecosystem and its productivity.	PO 6 PSO 1	U
CO-2	Explain about the impact of global warming and other weather elements on ecosystem.	PO 6 PSO 1	U
CO-3	Explain about the harmful effect of contaminants and effluents on productivity.	PO 6 PSO 1	U
CO-4	Illustrate the students to different environment assessing techniques including environmental auditing.	PO 6 PSO 1	U
CO-5	Knowledge on applying probiotics in aquaculture and other measures like bioremediation for pollution control where necessary.	PO 6 PSO 1	U, AP

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	-	-	**2**	-	**2**	-	-	-
CO2	-	-	**2**	-	**2**	-	-	-
CO3	-	-	**1**	-	**2**	-	-	-
CO4	-	-	**2**	-	**1**	-	-	-
CO5	-	-	**1**	-	**2**	-	-	-
AVG CO	-	-	**1.6**	-	**1.8**	-	-	-

CO -PO-PSO Mapping - COURSE NAME: FISH PROCESSING AND QUALITY CONTROL (P)

COURSE TITLE	FISH PROCESSING TECHNOLOGY AND QUALITY CONTROL		
COURSE CODE	**AQU01 – AQU6CRP0119**		
CO NO.	**Course outcome**	**POs / PSOs addressed**	**Cognitive Level**
CO-1	Demonstrate various equipment and usage of it in a fish processing lab.	PO 1, PSO 3	U
CO-2	Illustrate practical experiments on fish filleting and prawn pre-processing.	PO 6, PSO 3	AP
CO-3	Make up students to learn about freezing and drying principles.	PO 2, PSO 3	U
CO-4	Appraise students to know the approximation of the constituents present in the fish.	PO 8, PSO 3	U
CO-5	Demonstrate the preservation and processing of fishery products and their value additions	PO 1, PO 8 PSO 2	U

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	**2**	-	-	-	-	-	**2**	-
CO2	-	-	**2**	-	-	-	**2**	-
CO3	-	**2**	-	-	-	-	**2**	-
CO4	-	-	-	**1**	-	-	**2**	-
CO5	**1**	-	-	**1**	-	**2**	-	-
AVG CO	**1.5**	**2**	**2**	**1**	-	**2**	**2**	-

CO -PO-PSO Mapping - COURSE NAME: WATER AND SOIL QUALITY PARAMETERS (P)

COURSE TITLE	WATER AND SOIL QUALITY PARAMETERS		
COURSE CODE	**AQU01 – AQU6CRP0219**		
CO no.	**Course outcome**	**POs / PSOs addressed**	**Cognitive Level**
CO-1	Analysis of various physical, chemical and biological parameters of the water body.	PO 1, PSO 1	U
CO-2	Experiment with sampling and analyses soil and water quality required in environmental monitoring.	PO 1, PSO 1	AP
CO-3	Make use of contemporary tools and techniques required for environmental impact assessment.	PO 1, PSO 1	AP
CO-4	Summarize the importance of different water and soil quality parameters to convert aqua-farming operations into a profitable venture.	PO 1, PSO 1	U
CO-5	Explain the different aspects of water resource management, legal and economic issues associated with environmental hygiene.	PO 1, PSO 1	U

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4
CO1	**2**	-	-	-	**2**	-	-	-
CO2	**2**	-	-	-	**2**	-	-	-
CO3	**2**	-	-	-	**2**	-	-	-
CO4	**2**	-	-	-	**2**	-	-	-
CO5	**2**	-	-	-	**2**		-	
AVG CO	**2**	-	-		**2**	-	-	-

PROGRAMME ARTICULATION MATRIX

B.Sc. AQUACULTURE (2019 SYLLABUS)

COURSE CODE	COURSE	SEMESTER	PROGRAMME OUTCOMES				PROGRAMME SPECIFIC OUTCOMES			
			PO 1	PO 2	PO 3	PO 4	PSO 1	PSO 2	PSO 3	PSO 4
AQU1CRT0119	Biology of Fishes	I	1.75	1	-	-	-	-	1.6	-
AQU1CRT0219	Finfish and Shellfish Taxonomy	I	1.4	-	-	-	-	-	1.6	-
AQU1CRT0319	Freshwater Aquaculture	I	1.5	1.75	-	-	2	-	1	-
AQU1CRP0119	Taxonomy, Fishery Biology & Freshwater aquaculture	I	2	1	-	1	2	-	1.5	-
BCH1CMT0119	Elementary Biochemistry	I	2	-	-	-	-	-	1	-
ZOO1CMT0119	Non-chordate Diversity	I	2	-	-	-	-	-	1.8	-
AQU2CRT0119	Aquatic ecology	II	-	-	1.4	-	1.4	-	-	-
AQU2CRT0219	Fishing Technology	II	1.6	-	-	-	1.6	-	-	-
AQU2CRT0319	Brackishwater aquaculture and mariculture	II	1.4	-	2	-	1.4	-	-	-
AQU2CRP0119	Aquatic Ecology, Fishing Technology, Brackishwater Aquaculture and Mariculture	II	1.4	1	1	-	1.4	-	-	-
BCH2CMT0119	Biomolecules	II	2	-	-	-	-	-	1	-
BCH2CMP0119	Biomolecules	II	2	-	-	-	-	-	1	-
ZOO2CMT0119	Chordate Diversity	II	2	-	-	-	-	-	1.6	-

ZOO2C MP0119	Chordate Diversity	II	-	1.8	-	-	-	-	1.3	-
AQU3C RT0119	Inland and Marine Fisheries	III	1.5	2	1	2	2	-	1	1.5
AQU3C RT0219	Biostatistics and Computer Applications	III	2	1.4	-	-	-	-	-	1.4
AQU3C RT0319	Aquaculture Nutrition	III	2	-	-	-	1.8	-	-	-
AQU3C RP0119	Aquariculture, Biostatistics and Computer Applications	III	2	1.66	-	-	-	-	-	2
AQU3F WT0119	Freshwater Hatchery Training	III	-	3	-	3	1	3	-	-
BCH3CM T0119	Enzymology & Metabolism	III	2	-	-	-	-	-	1	-
ZOO3C MT0119	Human Physiology & Immunology	III	2	-	-	-	-	-	1	-
AQU4C RT0119	Genetics and Biotechnology	IV	2	-	-	-	1	-	1.8	-
AQU4C RT0219	Pathology in Aquaculture	IV	1.5	2	1	-	2	-	1.75	-
AQU4C RT0319	Aquariculture	IV	1.75	2			1.8		1	
AQU4C RP0119	Breeding and rearing of Aquarium Fishes	IV	2	-	-	-	2	-	2	-
BCH4C MT0119	Nutritional & Clinical Biochemistry	IV	2	-	-	-	-	-	1	-
BCH4C MP0119	Nutritional & Clinical Biochemistry – Practical	IV	2	-	-	-	-	-	1	-
ZOO4C MT0119	Applied Zoology	IV	-	2	2	2	-	-	1.5	1
ZOO4C MP0119	Applied Zoology – Practical	IV	2	2	-	-	-	-	2	-
AQU5C RT0119	Larval Nutrition And Culture Of Fish Food Organisms	V	2	2	-	-	2	-	2	-
AQU5C RT0219	Fishery microbiology	V	2	-	-	-	-	-	2	-

AQU5C RP0119	Fishery microbiology and pathology	V	2	2	-	2	2	-	2	-
AQU5C RP0219	Aquafarm management	V	1.8	-	-	-	2	-	-	-
AQU5O JT0119	On the job training	V	-	2	-	-	-	-	-	3
AQU5C OT0119	Ornamental Fish Culture	V	2	-	-	-	2	-	2	-
AQU6C RT0119	Aquaculture Management	VI	1.8	-	-	-	2	-	-	-
AQU6C RT0219	Aquaculture Engineering	VI	2	-	-	1.8	2	-	-	-
AQU6C RT0319	Fisheries Economics And Extension	VI	1.66	1.33	-	2	2	-	-	2
AQU6C RP0119	Fish Processing Technology and Quality Control	VI	1.5	2	2	1	-	2	2	-
AQU6C RP0219	Water and Soil Quality Parameters	VI	2	-	-		2	-	-	-
AQU6C BT0119	Aquaculture And Management Of Ecosystem	VI	-	-	1.6	-	1.8	-	-	-

St. Albert's College (Autonomous)

An initiative of Educational and Charitable Trust of Archdiocese of Verapoly

Banerji Road, Ernakulam, Kochi - 682018 Kerala, India | Office: 0484-2394225
Fax: 0484- 2391245 | website : www.alberts.edu.in