DEPARTMENT OF B.VOC., MARINE FOOD PROCESSING AND PRESERVATION TECHNOLOGY

Programme: B.VOC.,

PO No.	Programme Outcomes *Upon completion of the B.Voc. Degree Programme, the graduate will be able to*
PO 1:	Living and non-living things in the sea - Marine flora and fauna - Basic characteristics of different sea species - The ocean zones
PO 2:	Memorise the names of some sea creatures - Distinguish between sea animals and plants - Understand the relationship between species
PO 3:	Fishing craft in small-scale fisheries are generally small. They fish the area of the sea close to the shore.
PO 4:	The gear they use often determines the fishing methods used. As the craft are small, there is very limited space on board, which makes proper handling and preservation of the catch difficult.
PO 5:	Fishing communities confront severe problems in handling, distributing and marketing fish.

PSO No.	Programme Specific Outcomes *Upon completion of these courses the student would*
PSO 1:	Students with vocational training can find work in several state and central government organizations, non-profit groups, and academic institutions and in private sectors as well.
PSO 2:	This program prepares students for specific types of occupations and frequently for direct entry into the market.
PSO 3:	After completion of this program students will have enough competences, to get benefit from market opportunities.
PSO 4:	This program would enable students to update their knowledge and professional skills for entering the work force executing income generating activities or occupying better positions.
PSO 5:	At each exit level of this program, students will be able to apply knowledge of general education subjects and skill development subjects to the conceptualization of food processing technologies.

Course Title	SEMESTER-I / CORE COURSE-I Fundamentals of Marine Edible Animals		
Code	**ZVA**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Living and non-living things in the sea - Marine flora and fauna - Basic characteristics of different sea species - The ocean zones	PSO 4	U
CO-2	Memorise the names of some sea creatures - Distinguish between sea animals and plants - Understand the relationship between species.	PSO 5	U
CO-3	To build a strong foundation in marine edible products.	PSO 4	AP
CO-4	To prepare Students for career options in aquaculture centres, marine products, etc.	PSO 3	AP
CO-5	Students aquired knowledge in fishery science, as well as crustaceans and Molluscs	PSO 5	U

Course Title	CORE PRACTICAL – I Anatomy of Marine Edible Animals		
Code	ZVBY		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Define sea animal	PSO 4	U
CO-2	Identify features of different types of sea animals	PSO 4	U
CO-3	Identify features of different types of sea animals	PSO 2	AP
CO-4	Describe the various types of sea animal.	PSO 1	AN
CO-5	To build a strong foundation in marine edible products	PSO 1	U

Course Title	CORE PRACTICAL - II Harvest and post harvest handling of fishes		
Code	**ZVCY**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Fishing craft in small-scale fisheries are generally small. They fish the area of the sea close to the shore.	PSO 4	U
CO-2	Identify features of different types of sea animals	PSO 4	U
CO-3	The gear they use often determines the fishing methods used. As the craft are small, there is very limited space onboard, which makes proper handling and preservation of the catch difficult.	PSO 2	AP
CO-4	Fishing communities confront severe problems in handling, distributing and marketing fish.	PSO 2	AP
CO-5	The lack of suitable infrastructure including transport and ice-making plants increases the problems of rapid spoilage	PSO 2	AP

Course Title	ALLIED PRACTICAL – I INSTRUMENTATION AND COMPUTER APPLICATION IN FISHERIES		
Code	**ZVA1Y**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	After successful completion of this course students will able handling of spectrophotometer.	PSO 4	U
CO-2	Prepare presentation and report on computer system	PSO 2	U
CO-3	Identify the components of a computer system and demonstrate basic proficiency in commonly used applications	PSO 2	U
CO-4	Create, design, and produce professional documents using word processing software (i.e., MS Word).	PSO 4	AN
CO-5	Process, manipulate, and represent numeric data using the basic functions of spreadsheet software (i.e., MS Excel).	PSO 2	U

Course Title	CORE PARE – II Biochemical and Microbial changes in Fish		
Code	ZVD		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Keep track of food's quantitative importance in the production of farmed fish, which feed resources you use, and the ratios between the energizing nutrient (Protein, fat and carbohydrate) in commercial feeds.	PSO 2	AP
CO-2	Possess detailed knowledge of the fish digestive system, including a deeper focus on the development of gastrointestinal tract of marine fish larvae.	PSO 4	U
CO-3	Show detailed knowledge of various energizing and micro (vitamins and nutrients digestion, absorption, metabolism and biochemical function. .	PSO 4	AN
CO-4	Explain the components of fish feed on fish product quality, both positive (nutrients) and negative (contaminents from food and environment).	PSO 3	U
CO-5	Have knowledge of fish reproduction and how diet affects egg and fry quality.	PSO 1	U

Course Title	CORE PRACTICAL – III CHILLING TECHNOLOGY		
Code	ZVEY		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Explain the benefits of freezing and frozen storage of foods.	PSO 2	AP
CO-2	Describe and explain the importance of the typical steps in freezing and subsequent freezer storage and distribution of various liquid and solid foods.	PSO 2	AP
CO-3	Describe the important processes (freezing point depression, subcooling, nucleation, growth and recrystallization) involved in freezing foods and the effects of different extrinsic and intrinsic parameters on freezing of foods.	PSO 2	AP
CO-4	Apply the phase/state diagram for various foods to freezing and freezer storage, with special attention to areas of equilibrium and non equilibrium.	PSO 3	AP
CO-5	Compare and contrast different freezing technologies in terms of process characteristics and quality changes during freezing of different foods.	PSO 5	U

Course Title	CORE PRACTICAL – IV FISHCANNING TECHNOLOGY		
Code	**ZVFY**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	After completing this course students can able to, Deliver the different unit operations and its equipments involved in fish processing fishing resources.	PSO 1	U
CO-2	Develop value added products from fish. Able to know about quality control of fish processing Know about different methods of processing of fish Able to acquire a confident to get placement in any fish processing industry.	PSO 2	AN
CO-3	Describe the important processes (Canning point depression, subcooling, nucleation, growth and recrystallization) involved in freezing foods and the effects of different extrinsic and intrinsic parameters on Canning of foods.	PSO 1	U
CO-4	Apply the phase/state diagram for various foods to Canning and freezer storage, with special attention to areas of equilibrium and non equilibrium.	PSO 2	U
CO-5	Compare and contrast different Canning technologies in terms of process characteristics and quality changes during Canning of different foods	PSO 2	AN

Course Title	ALLIED PRACTICAL – II GENERAL FOOD CHEMISTRY		
Code	**ZVA2Y**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Students will be able to name and describe the general chemical structures of the major components foods (water, proteins, carbohydrates, and lipids).	PSO 4	U
CO-2	Students will be able to give a molecular rationalization for the observed physical properties and reactivity of major food components.	PSO 5	AN
CO-3	Students will be able to provide a theoretical explanation for observed extents and rates of reactions that are common to foods	PSO 2	AC
CO-4	Students will be able to predict how changes in overall composition are likely to change the reactivity of individual food components.	PSO 5	U
CO-5	Compare and contrast different Biochemical technologies in terms of process characteristics and quality changes during Biochemical technologies of different foods.	PSO 1	AN

Course Title	CORE COURSE – III FOOD SAFETY IN SEAFOOD INDUSTRY		
Code	**ZVG**		
CO No.	Course Outcomes On completion of the course the students will be able	**PSOs Addressed**	**Cognitive Level**
CO-1	Understand the concept of food safety, types of hazards and their control measures	PSO 2	AN
CO-2	Identify and prevent potential sources of food contamination Comprehend the need of hygiene and sanitation for ensuring food safety.	PSO 5	AN
CO-3	Students will be able to provide a theoretical explanation for observed extents and rates of reactions that are common to foods	PSO 2	AC
CO-4	Students will be able to predict how changes in overall composition are likely to change the reactivity of individual food components	PSO 5	U
CO-5	Knowledge of Food Safety Management tools	PSO 4	U

Course Title	CORE PRACTICAL - V FISH NUTRITION AND FEED TECHNOLOGY		
Code	ZVHY		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Have experience with processes both for design and optimizing feed production units, as well as planning and conducting experiments in feed technology.	PSO 2	AN
CO-2	Practical understanding of both feed ingredients and feed processing.	PSO 5	U
CO-3	Practical experience from all types of processing commonly used in industrial production of feed.	PSO 1	AN
CO-4	Experience in the selection of ingredients and processing optimized for different animals, such as production animals, fish and companion animals.	PSO 2	U
CO-5	High research-based competence within the interaction between processing and nutritional value of feed, both for production animals, fish and companion animals.	PSO 5	AN

Coure Title	CORE PRACTICAL – VI FISH MICROBIOLOGY AND QUALITY ASSURANCE		
Code	ZVIY		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Explain the interactions between microorganisms and the food environment, and factors influencing their growth and survival.	PSO 1	U
CO-2	Describe the characteristics of foodborne, waterborne and spoilage microorganisms, and methods for their isolation, detection and identification.	PSO 2	U
CO-3	Explain why microbiological quality control programmes are necessary in food production	PSO 1	AC
CO-4	Explain the effects of fermentation in food production and how it influences the microbiological quality and status of the food product.	PSO 3	U
CO-5	Discuss the rationale for the use of standard methods and procedures for the microbiological analysis of food.	PSO 3	U

Course Title	ALLIED PRACTICAL - III FISH PROCESSING TECHNOLOGY		
Code	**ZVA3Y**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	List marine and marine based products	PSO 5	U
CO-2	Recognize the fish processing and methods	PSO 1	U
CO-3	Locate the aquaculture and its functions	PSO 3	U
CO-4	Carryout the fish processing	PSO 2	AP
CO-5	Interpret the fish and its economics .Describe fish processing with various adoptive methods	PSO 5	AC

Course Title	CORE COURSE-VI PACKING AND LABELLING OF FISH AND FISHERY PRODUCTS		
Code	ZVJ		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Identifies packing materials like Glass containers, Metal cans, Types of paper packages, Cellophane, LDPE, HDPE, Aluminium foil and Retort pouch	PSO 3	U
CO-2	Practises packing of Frozen Material like IQF products, Block frozen Products.	PSO 5	AP
CO-3	Practises packing methods like, packing on stand pouch, packing in polythene covers.	PSO 5	AP
CO-4	Practises packing methods like, packing on stand pouch, packing in polythene covers.	PSO 3	U
CO-5	Classifies the packaging of canned fish and fish pickle	PSO 3	U

Course Title	CORE PRACTICAL – VII CURED AND DRIED FISHERY PRODUCTS		
Code	ZVKY		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Polyester polyethylene laminated pouches have been found to be highly suitable for hygienic retail packaging of cured fish products.	PSO 3	AP
CO-2	Preservation, nevertheless, is still the prime objective of fish smoking in most parts of the world.	PSO 1	AN
CO-3	Hard woods, such as oak, hickory, cherry, apple and beech, burn to give a smoke with the more phenols, which both preserve and give a characteristic, ‘medicated’ flavours to the product. Dried, Cured and Smoked Products	PSO 2	AN
CO-4	Colour impared to the fish by the smoking process is due to carbonyl amino reactions of the Maillard type.	PSO 3	AN
CO-5	These are splitting and cleaning, salting and hanging.	PSO 2	AP

Course Title	CORE PRACTICAL – VIII FISH PRODUCTS AND BY PRODUCTS TECHNOLOGY		
Code	ZVLY		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Has profound and detailed scientific knowledge and understanding of the (bio)chemical processes in biological raw materials during postharvest storage and their transformation into food products	PSO 3	U
CO-2	Has profound and detailed scientific knowledge and understanding of ecology, physiology, detection, use and combat microorganisms in food systems.	PSO 2	AN
CO-3	Has profound and detailed scientific knowledge in different fields of product technology such as vegetable products, dairy products, meat products, fish products, cereal derived products and fermented products including aspects of product development in relation to consumer behavior.	PSO 2	AN
CO-4	Colour impared to the fish by the smoking process is due to carbonyl amino reactions of the Maillard type.	PSO 1	AN
CO-5	These are splitting and cleaning, salting and hanging	PSO 2	U

Course Title	ALLIED PRACTICAL – IV STORAGE AND TRANSPORTATION OF FISHERY PRODUCTS		
Code	ZVA4Y		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	To maintain fish quality, both at sea and onshore, the specification of the production, storage and delivery system should enable the levels and patterns of demand to be serviced at all times**.**	PSO 2	U
CO-2	It is recommended that in most circumstances this is best achieved by the provision of an ice plant at the place of landing.	PSO 3	AN
CO-3	Where there is a significant supply to vessels, the plant is best located on a dedicated berth that enables direct delivery to the vessels.	PSO 2	U
CO-4	The delivery system should be able to accommodate the various hatch positions and shelterdeck arrangements etc.	PSO 1	AC
CO-5	These are splitting and cleaning, salting and hanging.	PSO 3	AP

Course Title	CORE COURSE-V ENTREPRENEURSHIP DEVELOPMENT		
Code	ZVM		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	The amount of subsidies provided is much less with less than 8 per cent of the total value even though challenged internationally.	PSO 1	U
CO-2	The marine fisheries sector in India is subsistence fishing and much different from the factory / commercial fishing of developed countries	PSO 2	AP
CO-3	In addition the fuel subsidy provided contributes to less than 5 per cent of the total value of landings	PSO 3	U
CO-4	But on the other side the welfare measures, saving cum relief, housing and other transfer payment adds to the subsidy component in the Indian context. Evaluates the Marine fish landings in India (Qty)	PSO 2	AC
CO-5	Records in Value of marine landings at landing centre.Value of marine landings at retail level of the delivery system should be maintained.Total subsidy of Entrepreneurs.	PSO 3	AC

Course Title	CORE COURSE-VI FISHERIES ECONOMICS		
Code	ZVN		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	To control the potential threats to Micro Economics.	PSO 3	U
CO-2	The marine fisheries sector in India is subsistence fishing and much different from the factory / commercial fishing of developed countries	PSO 2	AP
CO-3	In addition the fuel subsidy provided contributes to less than 5 per cent of the total value of landings	PSO 3	U
CO-4	But on the other side the welfare measures, saving cum relief, housing and other transfer payment adds to the subsidy component in the Indian context. Evaluates the Marine fish landings in India (Qty)	PSO 3	AN
CO-5	The delivery system should be able to accommodate the externality social cost.	PSO 3	AN

Course Title	CORE COURSE – VII QUALITY CONTROL OF FISH AND FISHERY PRODUCTS		
Code	ZVO		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Possess knowledge of the fish quality and intrinsic quality	PSO 1	U
CO-2	Fish preservation methods	PSO 3	AP
CO-3	Modified Atmospheric packaging(MAP)	PSO 2	AC
CO-4	Traditional method of fish preservation	PSO 2	AP
CO-5	Methods of fish drying: Natural, Solar, Artificial, Mechanical dryer.	PSO 1	AP

Course Title	CORE PRACTICAL-IX FISHERIES EXTENSION EDUCATION		
Code	ZVPY		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Visit to live fish market to know the availability of fishes and record keeping of relevant data	PSO 1	U
CO-2	Visit to dry fish market to know the preserved and processed fishes and record keeping of relevant data	PSO 2	AP
CO-3	Collection of fish, molluscs and crustacean from adjacent fishing harbours to study identification, anatomy and record keeping of Relevant Data.	PSO 3	AN
CO-4	Traditional method of fish preservation	PSO 3	AP
CO-5	Methods of fish drying: Natural, Solar, Artificial, Mechanical dryer	PSO 2	AP

Course Title	CORE PRACTICAL – X MARINE BIOTECHNOLOGY		
Code	**ZVQY**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	After successful completion of this course students will able to the Marine Ecosystem has Rich Biodiversity, and the organism themselves contain vital biochemical compounds.	PSO 1	U
CO-2	Identify the components of awide array of uses in medicine,environment, and other industries	PSO 3	U
CO-3	Collection of fish, molluscs and crustacean from adjacent fishing harbours to study identification, anatomy and record keeping of Relevant Data	PSO 2	AN
CO-4	Traditional method of fish preservation	PSO 3	AP
CO-5	Preparation of extruded products using single screw and twin screw extruder.	PSO 3	U

Course Title	CORE COURSE-VIII FISHERIES ADMINISTRATIONS AND LEGISLATION		
Code	ZVS		
CO No.	**Course Outcomes** After Successful completion of this course work students will able to	**PSOs Addressed**	**Cognitive Level**
CO-1	Fisheries Administration's tasks have shifted from general authority in fisheries to technical support to decentralized institutions, but this is not generally reflected in the actual functioning of the administration.	PSO 2	U
CO-2	The fisheries administration and decentralized authorities suffer from financial constraints and a lack of specialized personnel at community level	PSO 3	AP
CO-3	Views of fisheries staff on fisheries management differ between the national and the local level	PSO 1	AN
CO-4	Continuous reorganization and decentralization processes have reduced transparency and complicated communication line (both horizontal and vertical)	PSO 2	AC
CO-5	A multitude of non fisheries institutes increasingly have key roles to play in fisheries management fisheries legislation, with as one result that procedures are becoming long and complicated and the outcomes unsure.	PSO 2	AC