

Faculty of Ocean Science and Technology

Subject Code: B1807

Food Science and Technology

Module. 1	Food Chemistry: Water activity and food stability; Chemistry of carbohydrates, proteins, fats, vitamins, minerals; Lipids: Major classes; Fatty acids, biosynthesis of fatty acids, essential fatty acids, omega-3 fatty acids, eicosanoids. Principles of colorimetry, spectrophotometry, fluorometry, atomic absorption spectroscopy and chromatographic methods.
Module. 2	Food Microbiology: Microorganisms of importance in foods; Food borne pathogens; Preservation and spoilage of different food items; Food borne infections and intoxications; Fermented food products.
Module .3	Food Processing and Preservation: Cereal, legume and oil seed products; Fruit and vegetable products; Meat, Poultry and Dairy products; Food Additives; Value addition and by-product utilization. Technology of freezing preservation of food: Different types of freezers, IQF and Block freezing, Freeze drying. Thermal preservation; Canning: Methods, canned products, D-value, F-value; Preservation by curing and drying: Food Irradiation; Membrane filtration techniques, high pressure processing, high intensity light, pulsed electric field, ultra sound, MAP as preservation technologies.
Module. 4	Quality Control and Food Safety: Food quality assurance and food quality management; Good manufacturing/ management practices (GMP), good hygienic practices (GHP), good laboratory practices (GLP), food safety and HACCP principles; Methods of determining quality- objective and subjective methods; Instrumental and sensory methods of evaluation. Food laws and standards: FDA regulations, USDA regulations, EPA regulations, <i>Codex Alimentarius</i> Commission, Role of national and international regulatory agencies- Bureau of Indian Standards (BIS), AGMARK, Food Safety and Standards Authority of India (FSSAI).
Module. 5	Fish Processing: Chilled products; Frozen products; Salt cured and dried products; Marinades; Smoking and smoked products; Thermally processed products; Battered and breaded products; Technology of processing and preservation of gel forming fish flour; fish analogue products; Fish protein concentrate; Fish hydrolysates; seaweed products- agar, algin, carrageenan- use in foods; By-products from underutilized fish or fish processing waste: Fish meal, fish silage; Chitin, chitosan and glucosamine preparation from crustacean shell waste; shark fin rays; Fish sauce, fish sausage and fermented fish products.
Module .6	Waste Management and Utilization: Waste Water Treatment; measurement of organic content in waste water; physical unit operations in waste water treatment; Utilization of waste: Methods of utilizing wastes to make value added products; Pectin, food colourants, antioxidants from fruit peels, lycopene from tomato peel, vegetable seed oils, biomolecules and enzymes from meat processing; Generation of biogas, SCP, microalgae, animal feeds.
Module. 7	Food Packaging and Transportation: Packaging materials and containers; Protective lacquers and coatings for metal containers; Plastic films, inomers, copolymers, laminates; Packaging material testing. Recent trends in food packaging: vacuum packaging, modified atmospheric packaging, shrink packaging, retort pouch packaging, aseptic packing, active packaging, intelligent packaging, smart packaging; Packaging laws and regulations.