

Faculty of Fisheries

Subject Code: A1803

Fish Processing Technology

Module. 1	Amino acids – structure and quality of protein, digestibility, primary, secondary, tertiary, quaternary structure of protein and denaturation of protein. Fish oil, body oil, liver oil, fatty acid composition of fish oils, PUFA and HUFA in fish oil, rancidity, antioxidants and vitamins.
Module. 2	Functional properties of seafood proteins, Assessment of protein quality- Biological value, protein efficiency ratio, Net protein utilization. Post mortem changes in fish, rigor mortis, K-value, TMAO and its decomposition products, demethylase. Non-protein nitrogenous compounds in fish. Biogenic amines.
Module .3	Staining of bacteria, nutrition of bacteria, effect of environment on bacteria, growth phase of bacteria and microbial changes during icing, freezing and curing. Food borne infection/intoxication caused by major pathogens associated with seafood. Major seafood toxins Hurdle technology, Food preservation by use of radiation Irradiation: Radiation sources, units, dose levels, radappertization, radacidation, radurization.
Module. 4	Factors affecting quality of fresh fish, handling of fish and board fishing vessels, chill storage of fish, shelf life, storage method, insulated boxes, heat load calculation and ice as a cooling medium. Freezing – freezing curve for fish, Crystallization, homogeneous and heterogeneous nucleation, super cooling, eutectic point, physical changes during freezing, different types of freezers, quality changes during frozen storage and unit steps in freezing. Chemical treatment prior to freezing: antioxidants, cryoprotectants and other additives, theories of cryopreservation, glazing.
Module. 5	Rate of drying, unit steps in drying of fish, defects in dried products, mechanical driers and solar driers. Principles of thermal processing. Canning preservation of fish, sterilization and commercial sterilization, defects in canned products and unit steps in canning. Heat resistance of bacteria and spores, decimal reduction time, thermal death time, "Z" and "F" values, 12D concept, heat penetration, cold point, can size, shape, contents. Absolute sterility, statistical sterility, commercial sterility, pasteurization and sterilization. Spoilage of canned food. Flexible packing, retort pouch processing of fish and fishery products principles and techniques.
Module .6	Fish By-Products and Utilization of Fishery Waste- Fish silage, Fish hydrolysates: Fishmeal and different fisheries products, chitin, chitosan, fish sauce and fish silage. Miscellaneous by-products: Fish maws and isinglass, pearl essence, fertilizer, beche-de-mer, processing of snail meat and jelly fish. Modified atmosphere packaging, transportation of fish and value added products.
Module. 7	Quality assurance in fishery products. HACCP – principles of HACCP and its implementation. Water quality and standards. National and International standards: ISO 9000: 2000 series of quality assurance system, <i>Codex alimentarius</i> , USFDA and EU regulations for fish export trade. Factory sanitation and hygiene: National and international requirements, SSOP, Sanitary and Phytosanitary measures.