Name of the Programme: M.Sc. Biotechnology

Course Code: GBT-622

Title of the Course: FOOD TECHNOLOGY

Number of Credits: 2

Effective from AY: 2022-23

Pre-requisites for the Course:	Basic knowledge in Microbiology or Food Science.	
Course Objectives:	1) On completion of this course, students should be able to acquire knowledge and contribution of biotechnology in food industry. 2) To understand the safety standards in food industry	
Content:	**MODULE I** Industrial and Food Biotechnology; Introduction; Importance; Applications of biotechnology in food processing; Significant advances and Recent developments; Preservation and processing – chilling methods, phenomena of rigor mortis, spoilage changes – causative factors; Drying – conventional methods; Salt curing, pickling and smoking; Freezing and cold storage, Canning procedures; Role of preservatives in processing. Packing – handling fresh fish, frozen packs, individually quick frozen (IQF), layered and shatter packs; Fishery by-products, cannery waste, feeds, silage, fish gelatin, fish glue, chitin and chitosan, pearl essence, fertilizer	**No. of hours** 15
	MODULE II Seafood microbiology, factors influencing, microbial, growth and activity; food-borne pathogens: bacteria fungi, viruses; Spoilage factors; Toxins influencing food spoilage; Microbes as food single cell protein (SCP), microbial nutraceuticals; Quality management – concepts, planning, system, quality control, quality assurance, quality improvement; Certification standards – ISO and HACCP; Principles of quality related to food sanitation, contamination, pest control, human resource and occupational hazards; Novel product development, marketing and food export, government policies,	15

	economic importance, nutrition promotion, consumer studies qualitative and quantitative research methods.	
Pedagogy:	Lectures/ tutorials/assignments/self-study	
References/ Readings:	1. S. Omura, The search for bioactive compounds from microorganisms. Springer New York, 2011. 2. M. Fingerman, (Ed.), Recent Advances in Marine Biotechnology, Vol. 8: Bioremediation (1st ed.). CRC Press, 2003. 3. G. M. Evans, J.Furlong, G. G. Evans, Environmental Biotechnology: Theory and Application, United Kingdom: Wiley, 2011. 4. T. Fatma, Cyanobacterial and Algal Metabolism and Environmental Biotechnology. India: Narosa 1999. 5. A.S. Ninawe, K. Rathnakumar, Fish Processing Technology And Product Development. India: Narendra Publishing House, 2008. 6. P. Galvez Raul, Jean-Pascal Berge (Eds.) Utilization of Fish Waste. United Kingdom: CRC Press, 2013. 7. W.C .Frazier, D.C.Westhoff, V.M. Vanitha, Food Microbiology. 5th Edition. McGraw Hill Education, 2017. 8. G. M. Hall, Fish Processing Technology. United Kingdom: Springer US, 2012.	
Course Outcomes:	1. Students will gain knowledge about food preservation and safety. 2. Application of food technology in food related research, food industry and at national and international food organizations. 3. Understand the strategies for new product development, quality assurance, safety and marketing. 4. Impart knowledge to society regarding nutritional facts of food products and generate a healthier population. 5. Better understanding of marine - fish byproducts that will help them develop entrepreneur skills.	

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