



M.E.S MAMPAD COLLEGE (AUTONOMOUS)

MAMPAD COLLEGE P.O, MALAPPURAM, KERALA, INDIA, 676542

Affiliated to University of Calicut

Accredited by NAAC with A grade

Syllabus Year	2019-2020
Department	Department of Food Technology
Programme	MSc Food Science and Technology

Programme specific outcome.

Sl.No	Programme Outcome
PO1	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.
PO2	Effective Communication: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.
PO3	Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings.
PO4	Effective Citizenship: Demonstrate empathetic social concern and equity-centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
PO5	Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
PO6	Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.
PO7	Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context of socio-technological changes

Continue adding rows till the POs are completely added.

Programme out comeContinue adding rows till the POs are completely added

Sl.No	Programme Specific Outcome
PSO1	They demonstrate in-depth knowledge of the scientific foundations of the disciplines in engineering and the natural sciences that constitute the field of food technology
PSO2	They demonstrate an ability to analyze both complete systems and the constituent parts of the industrial manufacture of food products
PSO3	They demonstrate an insight into how different sub-systems co-operate with each other
PSO4	They demonstrate an insight into current research and development in the field
PSO5	They demonstrate enterprising skills
PSO6	They demonstrate an ability to identify, formulate and treat complex issues in the field of food technology from a holistic perspective and in an independent manner
PSO7	They able to analyze and evaluate critically various technical solutions in the field
PSO8	They demonstrate an ability to be able to participate in research and development projects in food technology
PSO9	They demonstrate an ability to acquire new knowledge in the field and to integrate this with existing knowledge
PSO10	They demonstrate an ability to develop and design industrial food product systems and processes with regard to human needs and conditions, and the goals of society both local and global, for sustainable development

PSO11	They demonstrate an ability to give a clear account of his/her level of knowledge and various types of project work, both orally and in writing, in an international context
PSO12	They demonstrate an ability to make judgments with regard to relevant scientific, social and ethical aspects in the field
PSO13	They demonstrate an ability for working in a team and for cooperation with variously constituted groups
PSO14	They demonstrate an ability to identify his/her need of further knowledge in the field and continuously deepen
PSO15	Demonstrate practical proficiency in a food analysis laboratory



Course Outcome (add sufficient Number of rows in each semester)

Semester	Course Code	Course Name	Course out come	
I	FST1C01	FOOD MICROBIOLOGY	Knowledge on historical perspective of Microbiology and idea on different types of microscopic techniques and its importance.	
			Better understanding on the general morphology, cytology, classification of microorganisms and importance of bacteria, fungi, virus and algae.	
			Knowledge on growth of microorganisms, quantification and control with special emphasis to sterilization techniques.	
			Understanding the food borne illness and also about the beneficial aspect of microorganisms giving special importance to fermentation process.	
			Study about the microbiology of food, water, animal and plant food products, better understanding of microbes in food spoilage and food preservation techniques.	
	FST1C02	FOOD CHEMISTRY AND ANALYSIS	Understand and describe the chemical structure & classification of food components	
			Analyse the relationship between the composition of the individual food components and their chemical and physical properties	
			Illustrate the principle and mechanism of analytical instruments	
			Develop an understanding and methodologies of instrumental techniques in food analysis understand about food emulsion ,Food Pigments & Flavours	
	FST1C03	RESEARCH METHODOLOGY AND STATISTICS	. Desire to get a research degree along with its consequential benefits	
			Desire to face the challenge in solving the unsolved problems, i.e., concern over practical problems initiates research	
			.Desire to get intellectual joy of doing some creative work;	
			Desire to be of service to society	
			Desire to get respectability	
	FST1C04	BASIC PRINCIPLES OF ENGINEERING	Describes physical,mechanical,rheological,frictional and aerodynamic properties of solid food materia	
				Learn about different modes of heat transfer and extrusion technology
				Explain the principle, method of drying and different drying equipments used in food industries
				Describe the construction and operating principles of refrigeration systems using engineering terminology
				Determine heat loads and heat losses in heating and cooling food process systems

II	FST2C05	BIOCHEMISTRY AND NUTRITION	Apply the principles of mass and energy balance to food processing systems.
			Understanding the relevance of biochemistry in food science and technology
			Knowledge on enzyme nomenclature, enzyme classification and kinetics, enzyme inhibition, mechanism of enzyme action
			Awareness on biomolecules, in the living system and their functions.
			. Information on carbohydrate metabolism, amino acid metabolism, Lipid metabolism, nucleic acids, minerals and vitamins.
			Study of biochemical pathways that sustain life and disorders due to inborn errors of metabolism.
	FST2C06	FOOD STORAGE AND INFESTATION CONTROL	Brief study on Dietetics and Health foods
			Understand about the food storage infestation, sources, factors affecting food commodities.
			Describe different types infestation control methods
			Know about types of pest on food commodities and mode of attack on food
			Explain sanitation and safety measures in food storage
			Give detailed structure about godown
			Assess the damage in storage premises
			understand the physical, chemical and biological control of pest
	FST2C07	INDUSTRIAL MICROBIOLOGY AND BIOCHEMICAL ENGINEERING	Acquire the knowledge about sanitation and safety measures in food storage premises
			Know about state ware house corporation, food corporation of India
			Detailed study on fermentation process, microbial growth kinetics and types of fermentation processes.
			Knowledge on upstream and downstream processes in fermentation.
			. Understanding the application of rDNA technology in fermentation process
			Awareness about the microbial production of substances for food application including amino acids, enzymes, organic acids, polysaccharides, vitamins etc.
FST2C08	FOOD ENGINEERING	Study of bioreactors, operations of bioreactors and scale-up o bioprocess and equipments.	
		Knowledge on the application of immobilization technology in fermentation and study of effluent treatment methods.	
		Describes physical, mechanical, rheological, frictional and aerodynamic properties of solid food materials	
		Learn about different modes of heat transfer and extrusion technology	
			Describes several separation techniques
			demonstrate of mass transfer operations
			Explain the principle, method of drying and different drying equipments used in food

			industries
			Demonstrate of milling equipments, material handling and transportation methods
	FST2CP09	Food Microbiology, Fermentation & Biotechnology	<ol style="list-style-type: none"> 1. Study of bacterial growth kinetics. 2. Understanding of enzyme immobilization technique. 3. Production of fermented food products 4. Knowledge on the testing of BOD and COD.
	FST2CP10	Food Chemistry, Biochemistry and Nutrition	<ol style="list-style-type: none"> 1. Describe bio-chemical analysis of food components <p>Developing practical skills of proximate & basic food compositions including carbohydrates, proteins, fats and minerals</p>
	FST2CP11	Food Process Engineering	<ol style="list-style-type: none"> 1. Familiarize with different drawing equipment, technical standards and procedures for construction of geometric figures 2. Develop imagination and ability to represent the shape, size and specifications of physical objects 3. Construct and Interpret appropriate drawing scale as per the situation 4. Improving technical communication skill in the form of communicative drawings. 5. Draw simple curves like ellipse, cycloid and spiral and draw Orthographic projections of points, lines and planes. 6. Draw orthographic projection of solids like cylinders, cones, prisms and pyramids and draw isometric projections of simple objects. <p>Familiarize with engineering accessories like boiler house, Electrical laboratory and workshop, refrigeration equipment</p>
III	FST3C12	TECHNOLOGY OF FRUITS,	Equip students with advanced knowledge of processing and preservation of fruits and vegetables.s

		VEGETABLES, SPICES & PLANTATION PRODUCTS	<p>Familiarize different aspects of post-harvest technology along with storage practices & Storage disorders</p> <p>. Understand the preparation and FSSAI specifications of Beverages, Tomato products c.</p> <p>. Understand the Technology of Jam Jelly and Marmalade</p> <p>Understand processing of plantation crops</p> <p>understand different water treatment</p>
	FST3C13	PRINCIPLES OF FOOD PROCESSING AND PRESERVATION	<p>Identify the different causes of food spoilage</p> <p>Understand the basic principles of food preservation</p> <p>Describe the different types of preservation methods– thermal , low temperature techniques, dehydration, and chemical preservation and natural fermentation.</p> <p>understand about the process of canning, heat penetration of microorganisms in containers and process time evaluation for canned products.</p> <p>Describe the recent trends in food preservation techniques which include high pressure processing, microwave processing, pulsed electric field processing, ohmic heating</p> <p>Familiarize about sensory evaluation of food and new product development</p>
	FST3C14	TECHNOLOGY OF CEREALS, LEGUMES AND OIL SEEDS	<p>Learn to appreciate the complex nature of flour and the complexity of modern baking technology</p> <p>develop competency to critically evaluate quality of product formulation and processing.</p> <p>Analyse the processing methods of pulses and legumes, nuts and oilseeds including coconut.</p>
	FST3C15	PACKAGING TECHNOLOGY	<p>Understand food packaging principles , packaging materials, types related to use with various food systems and packaging permeability.</p> <p>Understand about Passive and active packaging including modified atmosphere packaging and controlled atmosphere storage of foods, Reuse, disposability and printing of packaging, Labeling techniques and legislative requirements for labeling food and beverage products.</p> <p>Familiarize the purpose and principles of food packaging and examine the operations involved in packaging material manufacture.</p> <p>Critique environmental issues, regulations and quality control associated with food packaging.</p> <p>Identify and evaluate the suitability of processing and packaging techniques for various foods</p>
IV	FST4E16	FOOD PLANT AND QUALITY	<p>Evaluate the recent developments in the control of food safety.</p> <p>Have an integrated view of the issues involved.</p>

		MANAGEMENT	<p>conduct risk assessments of food safety problems in food industry</p> <p>Demonstrate detailed knowledge of the requirements for compliance with national and international food safety legislation.</p> <p>Explore the history and basic ideas underlying quality management and have a detailed knowledge of the role of Quality Management (QM) in modern management.</p> <p>Demonstrate knowledge of quality management systems, their implementation and the practical steps needed for implementation.</p> <p>Know how to control and maintain a quality management system.</p> <p>Have detailed knowledge of certification and accreditation.</p> <p>Have knowledge and insight of different quality management systems i.e. product quality management, safety and environmental management</p>
FST4E17		TECHNOLOGY OF ANIMAL FOOD PRODUCTS	<p>Understand the importance of safe slaughtering methods and its significance in food safety.</p> <p>Demonstrate Innovative ideas on the production of various products</p> <p>Describe the methods of preservation of different animal products based on their shelflife</p> <p>Demonstrate Quality parameters of egg and the preservation methods from ancient to modern technologies .</p> <p>Give a idea about fish processing technology.</p>
FST4E18		DAIRY TECHNOLOGY	<p>Compare different types of milk</p> <p>Understand about the platform quality test conducted for milk</p> <p>Describe in detail, the dairy plant operations</p> <p>Understand in detail about different milk products like cream, butter, ghee, ice cream, butter oil, condensed milk etc.</p> <p>Understand the fermented dairy products like yoghurt, acidophilus milk, butter milk etc.</p> <p>Demonstrate cheese, its classification and different processing methods adopted</p> <p>Understanding about dairy plant sanitation and hygiene</p>
FST4L22		Food Processing, Preservation and Packaging	<ol style="list-style-type: none"> 1. Apply and examine the knowledge of properties for selection of packaging materials for food products. 2. Understand various properties of packaging materials and determination of properties like bursting strength, tearing resistance, puncture resistance, impact strength,

			<p>and tear strength of packaging materials by various packaging testing equipments.</p> <p>3. Identification of packaging materials and knowledge on Chemical and physical tests of packaging materials</p>
FST4L23	Technology of Plant Food Products		<ol style="list-style-type: none"> 1. Evaluation of properties of wheat and rice –physical, chemical and rheological. 2. Processing and evaluation of bread, biscuit and cake. 3. Experimental milling of wheat and rice.
FST4L24	Technology of Animal Food Products		<ol style="list-style-type: none"> 1. Conduct platform tests for milk 2. Evaluate the quality of milk by analysis of fat, SNF, TS, specific gravity and acidity 3. Estimate the FFA content in ghee 4. Detect adulteration in milk 5. Conduct phosphatase test and methylene blue reduction test to check milk quality 6. Determine the quality of cream, butter, ghee, condensed milk and dried milk 7. Prepare milk products like khoa, paneer, chana and shrikhand 8. Analyze khoa for total solids, moisture, fat and acidity 9. Examine microbiological quality of milk

	FST4E19	Sugar and Confectionary Technology	<ol style="list-style-type: none">1. Get knowledge on the overview of the relevant physical chemical properties of sweeteners.2. Understand the different types of sugar confectionary products and their process.3. Expertise in the processing and preparation of various type sugar confectioneries.4. Evaluate the product quality and shelf life of the products5. Acquiring depth knowledge on the manufacturing leads to stable position in there search and development of the versatile confectionery products

