

# M.S. Ramaiah University of Applied Sciences

New BEL Road, MSR Nagar, Bangalore – 560054



**RAMAIAH  
UNIVERSITY**  
OF APPLIED SCIENCES

## PO, PSO, PEO & CO

**Programme: M.Sc. Food Science and Technology**

**Programme Code: 093** ✓

**Programme Outcome (PO)**

**Programme Specific Outcome (PSO)**

**Program Educational Objectives (PEO)**

**Course Outcomes (CO)**

 Registrar  
M.S. Ramaiah University of Applied Sciences  
Bangalore - 560 054

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# Faculty of Life and Allied Health Sciences (FLAHS)

Programme Name: M.Sc. Food Science and Technology

## Programme Outcomes (POs)

- PO 1. Technical Knowledge:** Demonstrate in-depth knowledge of the scientific fundamentals and the modern technical knowledge needed to support Food technology research activities.
- PO 2. Design/Development solution:** Identify, analyse and understand the problems related to life sciences and find valid conclusions with basic knowledge acquired in the fields.
- PO 3. Multidisciplinary approach:** Correlate how different sub-systems co-operate with each other into current research and development in the respective fields.
- PO 4. Entrepreneurship skills:** Analyze manufacturing constituents and complete systems for relevant products and to enable enterprising skills for competing globally.
- PO 5. Societal Responsibility:** Innovate and develop sustainable solutions and understand their effect on society and environment.
- PO 6. Leadership and Ethics:** Apply professional Ethics, Leadership and consensus building skills relevant to the aspects of business enterprise in the respective fields.
- PO 7. Lifelong learning:** Adopt changes and advancements in science and engage in independent learning.
- PO 8. Communication:** Communicate the information effectively in scientific writing and oral presentation.

## Programme Specific Outcomes (PSO)

- PSO 1.** Analyze and assess various food processing, preservation and packaging technologies.
- PSO 2.** Develop technologies for food processing, preservation packaging and quality assessment.
- PSO 3.** Design and develop new food products and sustainable packaging.
- PSO 4.** Demonstrate entrepreneurship traits to start a new enterprise and work under constraints to meet organizational objectives.

## Programme Educational Objectives (PEO):

The objectives of the programme are to enable the students to:

- PEO 1.** Provide a common platform for students from varied disciplines, to nurture their zeal to enhance knowledge on food science through structured courses and research opportunities.



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- PEO 2.** Enable the students to be proficient in new product development through application of cutting edge technologies in food fermentation, enzymology, and nutraceuticals.
- PEO 3.** Facilitate students with contemporary knowledge of food quality and safety for development of healthy and safe foods.
- PEO 4.** Stimulate interdisciplinary research or pursue doctoral programs and enable them for Industry and academia, thus enhancing skilled professionals in food industry.

### Course Outcomes (COs)

**Course Title & Code: Food Processing and Packaging (19FST501A)**

**After undergoing this course students will be able to:**

- CO-1. Explain the emerging technology in food processing like membrane technology, HPP, Ultrasound, SCFE
- CO-2. Describe Microwave process, radio frequency, IR drying and Hurdle technology
- CO-3. Discuss the advance food packing technologies
- CO-4. Perform advance food processing and packaging technologies
- CO 5. Explain the emerging technology in food processing like membrane technology, HPP, Ultrasound, SCFE

### Course Outcomes (COs)

**Course Title & Code: Food Additives and Preservatives (19FST502A)**

**After undergoing this course students will be able to:**

- CO-1. Describe the role of food additives and preservatives
- CO-2. Summarize the properties of food preservatives
- CO-3. Explain toxicology and safety evaluation of food additives
- CO-4. Differentiate intentional and unintentional food additives
- CO 5. Discuss about nutritive and non-nutritive sweeteners

### Course Outcomes (COs)

**Course Title & Code: Biochemistry (19FST551A)**

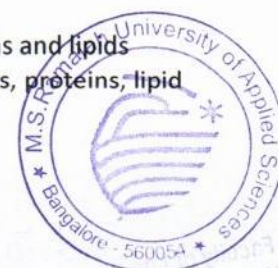
**After undergoing this course students will be able to:**

- CO-1. Explain the physico-chemical properties of water, cell structure organization and functions of cellular organelles
- CO-2. Outline the classification, chemical properties, general reactions, digestion, absorption and metabolism of carbohydrates, lipids and proteins
- CO-3. Summarize biological functions of enzymes, vitamins, minerals, nucleic acids and their application in food processing
- CO-4. Illustrate various pathways involved in metabolism of carbohydrates, proteins and lipids
- CO 5. Analyze and apply suitable method for quantitative analysis of carbohydrates, proteins, lipid and enzymes

  
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## Course Outcomes (COs)

Course Title & Code: Food Microbiology (19FST503A)

After undergoing this course students will be able to:

- CO-1. Explain the microbiological examination
- CO-2. Describe the microflora of fresh food and food preservation technologies
- CO-3. Discuss Quality Control/Quality Assurance Legislation for food safety
- CO-4. Prepare various media for cultivation of microorganisms
- CO 5. Demonstrate staining, isolation and bacteriological analysis

## Course Outcomes (COs)

Course Title & Code: Food Chemistry (19FST504A)

After undergoing this course students will be able to:

- CO-1. Explain the nature and scope of food chemistry in food science and technology
- CO-2. Describe the functional characteristics of lipids, proteins, carbohydrates, and their application in food processing
- CO-3. Outline application of various types of enzymes, vitamins, minerals and pigments in food industry
- CO-4. Explain the methods for optimization and retention of vitamins, minerals and natural colors in processed foods
- CO 5. Analyze proximate components, minerals, vitamins, antioxidants, tannins and pigments

## Course Outcomes (COs)

Course Title & Code: Enzymes in Food Processing (19FST555A)

After undergoing this course students will be able to:

- CO-1. Explain enzyme classification, properties, kinetics and characterization of enzymes
- CO-2. Describe various sources of enzymes and commercialization of enzyme processes used in food industry
- CO-3. Discuss and decide appropriate application of enzymes in milk production, beverage, baking, Jam preparations, oil and fat processing.

## Course Outcomes (COs)

Course Title & Code: Nutraceuticals and Functional Foods (19FST505A)

After undergoing this course students will be able to:

- CO-1. Describe the role of nutraceuticals and functional foods in health and disease
- CO-2. Explain the role of nutraceuticals in angiogenesis
- CO-3. Describe the manufacturing aspects of nutraceuticals
- CO-4. Formulate functional foods
- CO 5. Perform sensory evaluation of formulated products

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## Course Outcomes (COs)

Course Title & Code: Food Quality & Sensory Analysis (19FST506A)

After undergoing this course students will be able to:

- CO-1. Explain organoleptic properties of food products
- CO-2. Describe sensory evaluation methods used to assess the quality of food products
- CO-3. Discuss the significance of quality testing methods and advanced equipment employed
- CO-4. Assess quality of food products based on physical attributes, taste, odour, colour and texture
- CO 5. Apply sensory evaluation methods and analytical tools for various food products

## Course Outcomes (COs)

Course Title & Code: Food Production and Operations Management (19FST553A)

After undergoing this course students will be able to:

- CO-1. Demonstrate knowledge and understanding of principles and concepts of operations management & core operations techniques.
- CO-2. Critically analyse and evaluate the advantage and disadvantage of different techniques and approaches of operations management
- CO-3. Evaluate operations strategy, supply network design, process redesign
- CO-4. Apply techniques and approaches of operations management to solve practical operations management problems

## Course Outcomes (COs)

Course Title & Code: Food Production and Operations Management (19FST553A)

After undergoing this course students will be able to:

- CO-1. Demonstrate knowledge and understanding of principles and concepts of operations management & core operations techniques.
- CO-2. Critically analyse and evaluate the advantage and disadvantage of different techniques and approaches of operations management
- CO-3. Evaluate operations strategy, supply network design, process redesign
- CO-4. Apply techniques and approaches of operations management to solve practical operations management problems

## Course Outcomes (COs)

Course Title & Code: Baking and Confectionery Technology (19FST507A)

After undergoing this course students will be able to:

- CO-1. Discuss the role of ingredient in baking
- CO-2. Explain the effect of time and temperature on product quality
- CO-3. Apply hygiene and sanitation in bakery industry
- CO-4. Discuss the challenges of bulk handling of ingredients in processing plant

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## Course Outcomes (COs)

Course Title & Code: Advances in Fermentation Technology (19FST508A)

After undergoing this course students will be able to:

- CO-1. Explain the types of fermentation
- CO-2. Discuss mushrooms-cultivation and preservation
- CO-3. Prepare and demonstrate the various fermented food products
- CO-4. Describe the advance technologies in microbiology

## Course Outcomes (COs)

Course Title & Code: Research Methodology (19FST554A)

After undergoing this course students will be able to:

- CO-1. Describe the value, scope, relevance and mandatory steps of research
- CO-2. Demonstrate the procedures outlined for a systematic Literature Review
- CO-3. Analyze and prepare well-structured research proposal and paper
- CO-4. Identify and apply the essential skills desirable for an effective technical presentation

## Course Outcomes (COs)

Course Title & Code: Post-Harvest Technology of Cereals and Pulses (19FST521A)

After undergoing this course students will be able to:

- CO-1. Explain the importance of post-harvest and causes for post-harvest losses
- CO-2. Describe varies types of drying systems and storage structures
- CO-3. Discuss the different conveyors, elevators and its importance
- CO-4. Perform different physico-chemical properties for cereals and pulses

## Course Outcomes (COs)

Course Title & Code: Millet Processing Technology (19FST531A)

After undergoing this course students will be able to:

- CO-1. Describe the millet processing equipment
- CO-2. Explain the various millet processing methods and its effect on nutritional quality
- CO-3. Discuss the different traditional and bioprocess technologies
- CO-4. Perform various millet processing methods and prepare millet value added products



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## Course Outcomes (COs)

Course Title & Code: Fruits and Vegetable Processing Technology (19FST541A)

After undergoing this course students will be able to:

- CO-1. Explain the basic fruits and vegetables processing technologies
- CO-2. Discuss the various preservation methods
- CO-3. Discuss and apply advanced methods of processing and storage
- CO-4. Prepare different processed products using fruits and vegetables or optimize the process

## Course Outcomes (COs)

Course Title & Code: Spices and Flavour Technology (19FST551A)

After undergoing this course students will be able to:

- CO-1. Explain the methods of flavour extraction
- CO-2. Describe the artificial and natural flavouring compound
- CO-3. Discuss the techniques of flavor encapsulation
- CO-4. Demonstrate the process of essential oil extraction
- CO-5. Analyze the effects of cooking on flavor of food product

## Course Outcomes (COs)

Course Title & Code: Advances in Dairy Processing (19FST522A)

After undergoing this course students will be able to:

- CO-1. Explain the use of bio-protective factors for preservation of raw milk
- CO-2. Describe the methods of determining lethality of thermal processing of milk
- CO-3. Discuss the Principles and equipment used for bactofugation and Bactotherm processes
- CO-4. Determine the  $a_w$ , pH, thermal load of milk and milk products

## Course Outcomes (COs)

Course Title & Code: Dairy Microbiology (19FST532A)

After undergoing this course students will be able to:

- CO-1. Describe the effect of starter cultures on product quality
- CO-2. Differentiate beneficial and harmful bacteria's associated with dairy industry
- CO-3. Explain the bacteriological aspects of milk processing techniques
- CO-4. Describe national and international microbial standards
- CO-5. Describe the effect of starter cultures on product quality



  
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## Course Outcomes (COs)

Course Title & Code: Dairy Engineering (19FST542A)

After undergoing this course students will be able to:

- CO-1. Various engineering properties of dairy products
- CO-2. Thermal processing and evaporation process used in dairy plant
- CO-3. Illustrate the drying and material handling process carried out in dairy plant
- CO-4. Demonstrate the dairy processing and handling equipment

## Course Outcomes (COs)

Course Title & Code: Dairy Food Packaging (19FST552A)

After undergoing this course students will be able to:

- CO-1. Explain the various types of packaging materials used for dairy products
- CO-2. Describe the packaging equipment used for dairy products
- CO-3. Discuss the different methods of coding and standards of food packages
- CO-4. Determine the various properties of packaging materials used for dairy products

## Course Outcomes (COs)

Course Title & Code: Innovation and Entrepreneurship (19FST598A)

After undergoing this course students will be able to:

- CO-1. Describe the phases of product life cycle and role of innovation in product management
- CO-2. Apply product and innovation management concepts for product development process
- CO-3. Identify opportunities for new product development
- CO-4. Discuss the entrepreneurial traits and characteristics of an enterprises / businesses
- CO-5. Assess innovative ideas and strategies for nurturing an enterprise

## Course Outcomes (COs)

Course Title & Code: Group Project (19FST599A)

After undergoing this course students will be able to:

- CO-1. Work in a team and undertake a project in their area of specialization
- CO-2. Apply appropriate research methodology while formulating a project
- CO-3. Apply their theoretical knowledge of food science and technology for executing the project
- CO-4. Define specifications, analyze, develop and evaluate a project
- CO-5. Prepare and present appropriate forms of audio-visual, verbal presentations and written document to describe the project, its execution and outcome

  
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## Course Outcomes (COs)

Course Title & Code: Dissertation and Publication (19FST600A)

After undergoing this course students will be able to:

- CO-1. Critically review scholarly literature collected from various sources for the project purpose and formulate a research problem
- CO-2. Prepare and present a research proposal
- CO-3. Conduct research to achieve research objectives
- CO-4. Propose new ideas/methodologies or procedures for further improvement of the research undertaken
- CO-5. Create research document and write research papers for publications
- CO-6. Defend the research findings in front of scholarly audience

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