

Shivaji University, Kolhapur

Name of Department: Department of Food Science and Technology

Name of Programme: M. Sc. Food Science and Technology

Vision
To develop competent food technologist through proactive teaching and learning process, research, entrepreneurship and extension activities leading towards sustainable growth of the society.
Mission
To produce competent food technologist with sound knowledge of hygienic food processing, preservation, food standards and regulations, packaging and storage in order to reduce the food losses To nurture research acumen and entrepreneurship skills amongst students To promote and practice high standards of professional ethics and social values
Program Outcomes
<ol style="list-style-type: none">1. Post Graduates will have an ability to apply knowledge of Food Science, Food Processing, Food Engineering and Technology2. Post Graduates will have an ability to analysis the problems in food science, food processing and food technology, and will be competent to control them during foods manufacturing and storage3. Post Graduates will have an ability to identify problems and design to resolve the problems in the actual situations during food processing, food quality controlling, food packaging and storage4. Post Graduates will have an ability to express practical proficiency in the field of food analysis, food processing and food preservation5. Post Graduates will have advanced knowledge of food microbiology, food science, food engineering, food quality and food processing technology6. Post Graduates will have an ability of designing and development of food products as per the need of society keeping the value of food safety and health benefits7. Post Graduates will have an ability to understand the impact of the professional scientific and technical solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development8. Post Graduates will have an ability to apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice9. Post Graduates will have an ability to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings10. Post Graduates will have an ability to communicate effectively for self development11. Post Graduates will have knowledge of industrial economics and management of food industries12. Post Graduates will have an ability to recognize the need, and have preparations and ability to engage in independent and life-long learning in the broadest context of technological change
Program Specific Outcomes
<ol style="list-style-type: none">1. Post Graduates will apply the knowledge of food chemistry, food preservation, food processing and food packaging for the effective utilization of agricultural commodities to develop healthy and nutritious foods2. Post Graduates will design economically feasible equipments for the modernization of traditional food processing methods3. Post Graduates will apply the knowledge of food engineering and technology principles from the various aspects of food technology and related disciplines to solve practical and real-world problems

Course Outcomes		
Part-I Semester-I		
CC-101	Principles of Food Processing & Preservation	<ol style="list-style-type: none"> 1. Understanding of the need for food preservation and processing. 2. Understanding of the different preservation technique 3. Knowledge of the principles of food spoilage and the ways to prevent 4. Understanding of identification & selection of appropriate processing equipments and preservation methods for the specific foods 5. Knowledge indirect approaches to food preservation: packaging, hygienic design, sanitation, GMP 6. Understanding of SOPs and SSOPs during laboratory exercise.
CC-102	Food Microbiology	<ol style="list-style-type: none"> 1. Be able to understand and identify the various microbes associated with foods and food groups. 2. Enable students to understand and use various microbiological techniques for the study of foods. 3. Be able to understand and identify the role of this microbe in food spoilage, food preservation. 4. Be able to acquire, discover, and apply the theories and principles of food microbiology in practical, real-world situations and problems. 5. Understand the methods used to detect pathogens in foods. 6. Enable students to understand the methods of isolating and characterizing various microbes associated with foods and food groups.
CC-103	Food Chemistry	<ol style="list-style-type: none"> 1. The chemistry of food to control a chemical and biochemical reaction that influence food quality 2. The principles behind analytical techniques associated with food components and related problems 3. The role of food nutrients and its use for preservation of food (concepts emphasized in a laboratory experiment) 4. To study the basic nutrients and their requirements for human nutrition 5. Evaluate new product development. 6. Demonstrate practical proficiency in a food analysis laboratory.
CC-104	Biochemistry and Nutrition	<ol style="list-style-type: none"> 1. Better understanding in physiological and metabolic functions of nutrients 2. Familiarize nutritional assessment, RDA and Dietary Recommendations & guidelines 3. Understanding and determining BMR and body surface area 4. Understanding of food composition and energy balance in dietary planning 5. Effective understanding of diet plan formulation for health and for nutrition-related disorders. 6. Identifying appropriate techniques for Biochemical analysis of blood, urine
CCPR-105	Laboratory Course I	<ol style="list-style-type: none"> 1. Understand basic principles of chemical analysis of food and its application 2. Apply the knowledge of microbiology in food quality evaluation 3. To acquire the practical knowledge of methods for assessment of nutritional and health status 4. To gain hands-on experience and develop competency for handling suitable position in analytical laboratory or food industry
AEC-106	Communicative English - I	<ol style="list-style-type: none"> 1. Improve the vocabulary and communicative skill 2. Able to understand the written policies and SOPs in industry 3. Develop the ability to co-ordinate the task effectively for self and industry development 4. To generate professionalism and commitment towards job responsibilities

Part-I Semester-II		
CC-201	Principles of Food Engineering	<ol style="list-style-type: none"> 1. Understanding the basic principles of various food unit operations and its applications in food processing 2. Knowledge of the food processing equipments used for the different unit operations. 3. Understanding and practical experience of equipments, & how various unit operations work individually and together. 4. Understanding of the calculations of mass balance and energy balance of food processes 5. The students understood the importance of Food Process Engineering as one of the major pillars of Food Sci. and Tech. discipline. 6. Obtain knowledge in application of scientific principles in the processing technologies specific to the materials. 7. Develop an ability to identify, formulate, and solve engineering problems
CC-202	Cereal and Legume Technology	<ol style="list-style-type: none"> 1. Understand the structure of the grains (Cereals and Legumes) and the components of commercial products 2. Better understanding of the concepts of physiological characteristics of cereals and legumes 3. Able to gain knowledge in different processing of Cereals and legumes and also its value added products. 4. Identify the common faults and causes in cereal products 5. Understand quality attributes the laboratory techniques to assess grain and flour quality 6. Thorough Knowledge and understandings of the specific processing technologies used for different cereals and legumes and products
CC-203	Fruit and Vegetable Technology	<ol style="list-style-type: none"> 1. Preserving the fruits and vegetables and their products results into availability of them in off season. 2. Bi-products can be prepared from fruits and vegetables. 3. Storage of food material in perfect consumable condition for a longer time without undergoing any spoilage can be possible. 4. By the use of various methods shelf -life of fruits and vegetables can be extended and used as material for processing units. 5. Processing gives value addition to fruit and vegetables due to which cash crop farmers get more income from the field. 6. Identify the common faults and causes in fruits and vegetable product processing
CC-204	Fermentation Technology	<ol style="list-style-type: none"> 1. Application of biological and engineering principles to problems involving microbial and biological/biochemical systems. 2. Understand the work space, tool and equipment for fermented products 3. Understanding the basic principles of fermentation process and its applications in food processing 4. Recognize the fundamentals of fermentation technology and Assess modeling of bioprocesses 5. Distinguish bioreactor operations and scale-up of bioreactors 6. Analyze the bioprocess paradigm: Scale-down, simulation and economics, sterilization, and bio-burden in biological manufacturing 7. Justify and analyze the problem associated to quality of fermented products
CCPR-205	Laboratory	<ol style="list-style-type: none"> 1. Understand basic principles involved in processing and

	Course II	<p>manufacturing of food products</p> <ol style="list-style-type: none"> 2. To build practical proficiency in process and equipment designing 3. Able to quire knowledge required for trouble shooting the process and product defects 4. To gain hands-on experience and develop competency for handling suitable position in food processing industry
SEC-206	Fundamentals of Information Technology - I	<ol style="list-style-type: none"> 1. Acquire knowledge about Information Technology Tools which are useful to manage the industry 2. To gain computer proficiency for self development 3. To understand the role Information Technology in food manufacturing and food analytics 4. Apply the knowledge for brining technological changes in the field of food processing and preservation
Part-II Semester-III		
CC-301	Technology of Meat, Fish and Poultry Products	<ol style="list-style-type: none"> 1. Able to understand about processing of meat, poultry and fish, preparation of different types of products from meat, poultry and fish. 2. Students will get to know about the nutritional profile of meat, poultry, fish and egg 3. Gain knowledge on the methods of grading meat 4. Different techniques available to slaughter animal 5. Processing and preservation of egg and fish 6. Quality control and standardization of meat, fish and poultry
CCS-302	Technology of Milk and Milk Products	<ol style="list-style-type: none"> 1. Train students to scientifically undertake all operations of dairy technology and to create employment potential and man power for dairy development 2. To create entrepreneur in milk and milk products 3. To develop organizational capabilities among our youth in milk and milk product industry 4. To develop skill, instil confidence by enhancing life skills 5. To increase nutritional status and income of community through dairy farming
CCS-303	Food Additives, Contaminants and Toxicology	<ol style="list-style-type: none"> 1. Better understanding of the functions of different food additives in improving shelf life, texture and other physical and sensory characteristics of foods 2. Exposure about food additives related to bakery and confectionary 3. Exposure about types and chemical properties of pigments, flavouring compounds and their processing effect. 4. Provide students with a basic understanding of the principles of food toxicology 5. Identification of appropriate techniques for analysis of additives 6. Recognize the common analytical techniques for detection of food adulterant
DSE-304	Food Quality and Safety Management	<ol style="list-style-type: none"> 1. Develop a HACCP plans for different food industries 2. Understanding knowledge of HACCP certification 3. Understand laws and regulations governing food safety principles (FSMS and HACCP) 4. Understand industry food safety requirements and certifications :organic, halal, kosher, GFSI, SQF (SQF implementation certification) 5. Understand auditing and different auditing schemes, and be able to complete internal (first party) audits

		6. Presents ideas in written, graphic and oral form using computer software where appropriate
CCPR-305	Laboratory Course III	<ol style="list-style-type: none"> 1. Understand basic principles involved animal product processing and manufacturing 2. To build practical proficiency in process and equipment designing 3. Able to acquire knowledge regarding analytical tools and methods required for food quality control 4. To gain hands-on experience and develop competency for handling suitable position in food processing industry
AEC-306	Communicative English - II	<ol style="list-style-type: none"> 1. Improve the vocabulary and communicative skill 2. Able to understand the written policies and SOPs in industry 3. Develop the ability to co-ordinate the task effectively for self and industry development 4. To generate professionalism and commitment towards job responsibilities
Part-II semester-IV		
CC-401	Technology of Oilseeds and Fats	<ol style="list-style-type: none"> 1. Better understanding of the concepts of physiological characteristics of oil bearing materials (Plant and Animal Origin) and lipids thereof 2. Able to gain knowledge in different processing of oilseeds and oil extraction, and also its by-products. 3. Understand the work space, tool and equipment for post harvest technology of oilseeds, oil extraction and refining of oil 4. Able to acquire a confidence to get placement in any kind of oilseeds processing industry with minimum post harvest losses 5. Understanding by-product process technique 6. Thorough knowledge and understandings of the specific processing technologies, and analytical methods for quality evaluation
CCS-402	Food Biotechnology	<ol style="list-style-type: none"> 1. Understanding knowledge regarding use of biotechnology in various fields (Plant and Animal) 2. Understanding knowledge regarding use of biotechnology in food sector which helps in producing different products 3. Understanding biotechnology helps in understanding the microbiology 4. Fermented food technology helps to prepare various healthy products 5. Upstream and downstream Processing Improvement Techniques can be helpful in production of various nutrients and medicines 6. Understanding of microbial contents
CCS-403	Post-Harvest Technology of Plantation Crops	<ol style="list-style-type: none"> 1. Better understanding of the concepts of physiological characteristics of plantation crops and spices 2. Able to gain knowledge in different processing of plantation crops, spices, tea and coffee and also its value added products 3. Understand the work space, tool and equipment for post harvest technology plantation crops, spices, tea and coffee 4. Get placed in any kind of plantation crops, spices, tea, & coffee, industry with minimum post harvest losses and maximum benefit to the industry. 5. Thorough knowledge and understandings of the specific processing technologies used for different foods products derived from these materials 6. Quality control and standardization of Post Harvest Technology of

		Plantation Crops
DSE-404	Food Packaging	<ol style="list-style-type: none"> 1. Better Understandings of the various properties of food packaging materials 2. Ability to Select suitable packaging material for different food substances 3. Describe the role and function of packaging materials used for a range of consumer food needs and wants 4. Relate the properties of food packages to conversion technologies, processing and packaging technologies and user requirements including safety, convenience and environmental issues. 5. Describe the technology involved in the production, shaping and printing of various packaging materials and package 6. Understanding why different materials are used for different purposes.
CCPR-405	Laboratory Course IV	<ol style="list-style-type: none"> 1. Able to quire knowledge regarding analytical tools and methods suitable for quality evaluation 2. To gain hands-on experience and develop competency for handling suitable position in food processing industry 3. Build an ability to identify and solve the research problems in the field of food science and technology through independent learning 4. Imbibe culture of research and innovation though research-based learning
SEC-406	Fundamentals of Information Technology - II	<ol style="list-style-type: none"> 1. Acquire knowledge about Information Technology Tools which are useful to manage the industry 2. To gain computer proficiency for self development 3. To understand the role Information Technology in food manufacturing and food analytics 4. Apply the knowledge for brining technological changes in the field of food processing and preservation

NAAC Co-ordinator
Dr. Abhijeet Arun Gatade

Head (I/c)
Dr. Akshaya Kumar Sahoo