Rayat Shikshan Sanstha's

KARMAVEER BHAURAO PATIL COLLEGE, VASHI.

(Autonomous)

Name of the program: Bachelor of Vocational Studies

Program Outcomes (POs)

PO-1	**Disciplinary Knowledge**	Understand the basic concepts, fundamental principles and experimental findings and the scientific theories related to food technology, food science and food technology & engineering and its other fields related to the program.
PO-2	**Communication Skills**	Develop various communication skills such as reading, listening and speaking skills to express ideas and views clearly and effectively.
PO-3	**Critical Thinking**	Propose novel ideas in explaining the scientific data, facts and figures related to science and technology.
PO-4	**Analytical Reasoning and Problem Solving**	To enable the students with good scientific and engineering knowledge so as to comprehend, design, and create food products and devices for the food industry and provide solutions for the challenges in the food industry as well as in agriculture.
PO-5	**Sense of Inquiry**	Curiously ask relevant questions for better understanding of fundamental concepts and principles, scientific theories and applications related to the study.
PO-6	**Use of Modern Tools**	Operate modern tools, equipment, instruments and laboratory techniques to perform the experiments and write the programs in different languages.
PO-7	**Research Skills**	Understand how to design, collect, analyze, interpret and evaluate information/data that is relevant to food technology.
PO-8	**Application of Knowledge**	Develop a scientific outlook and apply the knowledge with respect to food technology.
PO-9	**Ethical Awareness**	To train students in professional and ethical attitude, effective communication skills, teamwork skills and multidisciplinary approaches related to food technology.
PO-10	**Teamwork**	Work collectively and participate to take initiative for various field- based situations related to science, technology and society at large.
PO-11	**Environment and Sustainability**	Create social awareness about environment and develop sustainability for betterment of future.
PO-12	**Lifelong Learning**	Ability of self-driven to explore, learn and gain knowledge and new skills to improve the quality of life and sense of self-worth by paying attention to the ideas and goals throughout the life.

Program coordinator

BOS Chairman

Principal

I/C PRINCIPAL
KARMAVEER BHAURAO PATIL
VASHI, NAVI MUMBAI 400...

KARMAVEER BHAURAO PATIL COLLEGE VASHI NAVI MUMBAI

Rayat Shikshan Sanstha's

KARMAVEER BHAURAO PATIL COLLEGE, VASHI.

(Autonomous)

Name of the Program: Bachelor of Vocational Studies

Name of the Specific Program: B.Voc Food Technology

Program Specific Outcomes (PSOs)

At the end of the program, the student will understand and will able to-

PSO-1	Apply the knowledge in equipment design, developing innovative products and entrepreneurship.
PSO-2	Apply solutions to real world food industry challenges by adopting multidisciplinary approach ensuring food safety and quality.
PSO-3	Analyze and formulate ways to process, preserve, package, or store food, according to industrial requirements.
PSO-4	Demonstrate an ability to work in Food industries, research organization and teaching.

Program coordinator

BOS Chairman

Principal

I/C PRINCIPAL
KARMAVEER BHAURAO PATIL COLLEGE
VASHI, NAVI MUMBAI 400 703.

KARMAVEER BHAURAO PATIL COLLEGE VASHI NAVI MUMBAI

Name of the Specific Program: B.Voc Food Technology

Course Outcomes (COs)

Sr. No	Course Code	Course Name	Course Outcomes
1.	UGFT101	Introduction to food	**CO1:** Define various food components and learn about their importance in the food. [1] * **CO2:** Understand the basic principle, working mechanisms of various food components, and various chemical reactions that take place in food. [2] * **CO3:** Identify and apply various biochemical and enzymatic reactions, to prevent food spoilage [3] * **CO4** Analyze different chemical and enzymatic reaction [4] 8 **CO5:** Evaluate methods of food processing and preservation. [5] *
2.	UGFT102	Food Microbiology	**CO1:** Learn the basics of microorganisms, their growth medium fermentation process [1] * **CO2:** understand isolation techniques growth pattern of microorganisms their metabolism and their application in real life [2] * **CO3:** Utilize various kinds of microorganisms in food processing [3] * **CO4:** Characterize microorganisms according to their properties [3] *
3.	UGFT 103	Food Chemistry	**CO1:** Know the definitions, functions, and classification of carbohydrates, proteins, lipids, vitamins, and water. [1] * **CO2:** Study the mechanism and principles of food constituents. [1] * **CO3:** Apply the principles and properties of food constituents in food processing. [3] * **CO4:** Analyze the changes that occur in the different constituents during storage and ways and means to prevent them. [4] *
4.	UGFTP 101	Communication Skills in English	**CO1:** Articulate spoken utterances clearly and fluently. [3] * **CO2:** Speak simple sentences in English with one another in unpredictable situations. [3] * **CO3:** Participate in dyadic communication and use phatic communion. [2] * **CO4:** Employ word stress and intonation in spoken utterances. [3] *

5.	**UGFTP 102**	**Food Microbiology**	**CO1:** Understand the basic concepts in microbiology and they will understand the principle and working of different instruments used in microbiology lab along with its application. [1] * **CO2:** Learn how to clean equipment and sterilize them [2] * **CO4:** Perform different staining methods for bacteria and their importance. [3] * **CO5:** Identify the difference between bacteria and fungi.[2] * **CO6**: Perform different methods used for the isolation and enumeration of bacteria from food samples. [3] *
6.	**UGFTP 103**	**Food Chemistry**	**CO1:** Introduction to different types of chemical reactions used for the identification of carbohydrates [2] * **CO2:** Estimate FFA content in the given oil sample. [3] * **CO3:** Perform estimation of ascorbic acid, protein, and reducing sugar from food samples [3] *. **CO4:** Estimate gluten content from the given flour. [5] * **CO5:** Importance of moisture content and will learn to estimate it from food samples. [2] *
7.	**UGFT 201**	**Principle of food preservation**	**CO-1**: Analyse the methods of preservation to be applied to different foodstuffs. [3] * **CO-2:** Understand the role of food additives and their use in food making. [2] * **CO-3:** Study how the different foods are preserved. [3] *
8.	**UGFT202**	**Food Analysis**	**CO-1:** Students will remember various food analysis techniques, followed by analysis, interpretation, and presentation of the results. [2] * **CO-2:** Understand the principles of food analysis by conducting various analytical techniques [2] * **CO-3:** Apply a range of chemical analyses of food components and apply valid sampling techniques to food materials having widely diverse properties and volumes. [3] * **CO-4:** Analyze, interpret and report on results obtained in a scientific format. [4] *
9.	**UGFT 203**	**Processing of fruits and vegetables**	**CO1:** Acquire knowledge of the different physical, chemical, and nutritional properties of fruits and vegetables [3] * **CO2:** Acquire insight into the various chemical and biochemical changes which can influence the functional properties of the product. [3] *

			CO3: Identify the spoilage in fruits and vegetables and state the reason for the spoilage following proper storage precautions. [1] * **CO4:** Analyze the sugar content in fruit and vegetable products. [4] *
10.	**UGFTP 201**	**Principle of food preservation**	**CO1**: Analyze different processing and preservation of different food categories. [4] * **CO2:** Implement various processing and preservation techniques. [3] * **CO3**: Identify novel technologies in the processing of fleshy foods. [2] *
11.	**UGFTP 202**	**Food Analysis**	**CO1:** To give a thorough understanding basic chemical properties of solutions. [2] * **CO2**: Understanding of the working principle and instrumentation of various instruments used in food analysis. [2] * **CO3:** Importance of various methods to identify any malfunction aspect of food and different microbial assays. [1] *
12.	**UGFTP 203**	**Processing of fruits and vegetables**	**CO1:** Students will have a thorough understanding of various methods to identify any disorder in fresh fruits and vegetables. [2] * **CO2:** Students will get a thorough idea of the techniques used to increase the palatability of fruits and vegetables. [3] * **CO3:** Students will get to know all the processing techniques to make value-added products from fruits and vegetables. [3] * **CO4:** Students will have a thorough knowledge of different transportation, packaging, and storing techniques of fresh as well as processed products. [3] * **CO5:** Students will get to know the methods used for increasing shelf life. [2] *
13.	**UGFT 301**	**Technology of Fish. Meat and Egg Processing**	**CO-1:** Illustrate on the classification, composition and spoilage of fish. [4] * **CO2**: Describe what is a carcass, concept of red and white meat, composition of meat, post mortem changes in meat, rigor mortis and aging of meat. [2] * **CO3**: Describe the composition of egg, nutritive value, proteins in egg, deterioration of egg quality. [2] * **CO4**: Describe the factors which can indicate the freshness level in meat, fish, egg. [2] *

			CO5: Paraphrase about the distribution of meat, fish, egg in the diet across the world. [2] *
14.	**UGFT302**	**Technology of Spices and Plantation Crop**	**CO1:** Introduce the classification, composition and functions of different spices.[1] * **CO2**: Justify the major international quality specifications of spices.[3] * **CO3**: Prepare the flow chart of the various steps involved in spice processing.[6] * **CO4**: Infer the post-processing treatments in spice processing.[4] *
15.	**UGFT 303**	**Technology of Fermented Food**	**CO1:** Illustrate the FSSAI regulations for fermented food products.[3] * **CO2**: Summarize methods of preparation for making fermented meat products.[2] * **CO3**: Study the methods of soy product formation.[3] * **CO4**: Justify the technology for fermented cereal products.[3] * **CO5**: Study about the fermented vegetables in their different products.[2] *
16.	**UGFT304**	**Food Microbiology**	**CO1:** Justify FSSAI regulations for food microbiology.[3] * **CO2**: Illustrate food microbiology from discovery to changes caused due to microorganisms in fermentation [3] * **CO3**: Study the growth and survival of microorganisms in food.[2] * **CO4**: Describe physical and chemical changes caused by the microorganism.[2] * **CO5**: Solve the problems caused due to microorganisms in food by physical and chemical methods to control.[5] *
17.	**UGFT305**	**Food Additives and Flavour Technology**	**CO1:** Describe flavour and is flavour technology. [2] * **CO2:** Exemplify the different types of flavours in food. [2] * **CO3:** Illustrate on the process generated flavours in food products, stability of flavours during processing. [4] * **CO4**: Analyse flavour. [5] * **CO5:** Theoretically and diagrammatically explain the flavour extraction techniques, flavour emulsions techniques. [2] *
18.	**UGFT 306**	**Business Management**	**CO1:** Describe the roles, skills and functions of management. **CO2:** Solve organizational problems and develop optimal managerial decisions. (2) **CO3:** Summarize the complexities associated with management of human resources in the organizations and integrate the learning in handling these complexities (2) **CO4:** Schematically/diagrammatically elaborate Maslow's theory of hierarchy of needs and its application to the motivation of employees in an organization (4)

			CO5: Exemplify the meaning of motivation and its importance in business management. (2)
19.	**UGFT401**	**Technology of Cereals, Pulses, and Oilseeds**	**CO-1:** Study FSSAI regulations for paddy processing.[3] * CO2; Summarise the composition and quality characteristics of paddy.[2] * CO3: Describe and introduce the technique of paddy parboiling and further treatment of rice.[2] * CO4: Justify dryers and their role in rice processing.[5] * CO5: Describe the processing of different types of rice products.[2] *
20.	**UGFT 402**	**Technology of Beverages**	**CO1:** Know the basics and definitions of fruit beverages, carbonated beverages, and alcoholic and non-alcoholic beverages. [2] * **CO2:** Study the processing and FSSAI regulations of beverages. [2] * **CO3:** Identify the processing techniques involved in different beverage manufacturing. [3] *
21.	**UGFT 403**	**Food product design and development**	**CO-1:** Describe what is plant layout, the influence of location on layout, ideal plant layout, and location & Describe location theory and modules like Weber's theory. [3] * **CO-2:** Understand the importance and objectives of new product development. [2] * **CO-3:** Standardize and formulate the new product. [4] * **CO-4:** Analyze the new product development with various aspects such as literature survey, processing, consumer preferences, and market trends. [4] * **CO-5:** Evaluate different methods used in the sensory analysis of the newly formulated product. [5] * **CO-6:** Design the prototype of the product. [5] *
22.	**UGFT 404**	**Food Plant Designing**	**CO1**: Illustrate the different types of buildings with the advantages and disadvantages of each type. [4] * **CO2**: Exemplify the construction material suitable for different food industries. [2] * **CO3**: Describe the flooring and foundation of food industries and on what the selection of these depend. [2] * **CO4**: Describe about walls, doors, windows, drains in food industries, the materials used for the construction of the same with its placement. [2] * **CO5**: Describe ventilation, illumination, fly control, mold prevention in the food industries. [2] *
23.	**UGFT 405**	**By product utilization and waste management**	**CO1:** Study the pre-treatment of waste.[2] * **CO2:** Describe the secondary treatment of waste.[2] * **CO3:** Illustrate pollution control by waste management.[3] *

24.	**UGFT 406**	**Marketing Management**	**CO1**: Compare and contrast between marketing and selling (4) **CO2**: Exemplify the role of marketing in the development of an economy in a firm, to the society and consumers. (2) **CO3**: Paraphrase the important functions of marketing (2) **CO4**: Summarise the process of selecting an appropriate segmentation approach and deciding which customer segments to target for marketing activities. (2) **CO5**: Describe common segmentation approaches (2)
25.	**UGFT 501**	**Processing of Fruits and Vegetables**	**CO1:** Acquire knowledge of the different physical, chemical, and nutritional properties of fruits and vegetables [3] * **CO2:** Acquire insight into the various chemical and biochemical changes which can influence the functional properties of the product. [3] * **CO3:** Identify the spoilage in fruits and vegetables and state the reason for the spoilage following proper storage precautions. [2] * **CO4:** Analyse the sugar content in fruit and vegetable products. [4] *
26.	**UGFT 502**	**Physical properties of food**	**CO-1:** Develop the skills for engineering properties of food and processes also developing [3] * Ideas regarding the design of food processing equipment. **CO-2:** Understand physical property importance and application. [2] * **CO-3:** Compare and contrast the methods of estimation for the physical properties of foods. [3] * **CO-4:** Analyses of food physical properties like sphericity and roundness. [4] *
27.	**UGFT503**	**Sensory Evaluation of Food**	**CO1:** Define sensory evaluation basic Arrangements for Sensory Evaluation Test, Statistical Methods for Sensory Evaluation [1] * **CO2:** Understand the Classification of test methods' mechanical characteristics – chewiness, brittleness, and geometric characteristics, sensory panel- types – criteria for panel selection. [2] * **CO3:** Apply test methods for quality control; storage stability of product development and consumer acceptance testing. [3] * **CO4:** Evaluate different food products by using various sensory test methods [4] *
28.	**UGFT 504**	**Food processing & equipment**	**CO-1:** Remember the principle of the mechanism of thermal and non-thermal processing. [3] * **CO-2:** Understand various mechanisms of heat transfer. [2] *

			CO-3: Apply the principle and mechanisms of various thermal and non-thermal processing used in industries. [3] *
29.	**UGFT 505**	**Food biotechnology and nutraceuticals**	**CO1:** Define nutraceuticals, probiotics prebiotics, functional foods GM foods Infant food formulation [1] * **CO2:** Learn about the principle working of nutraceuticals phytochemicals probiotics GM Food and their importance [3] * **CO3:** Identify the current status of probiotics, nutraceutical infant food formulation, and GM foods in the world market [2] * **CO4:** Analyze the current status of probiotics, nutraceutical infant food formulation, and GM foods in the world market. [3] *
30.	**UGFTP 501 TO UGFTP 505**	**Practical**	**CO1:** To process all kinds of fruits and vegetable products. [3] * **CO2:** To design a product and explain its physical characteristics and the methods used to determine the same. [4] * **CO3:** Summarise a plan to set sensory evaluation tests for a particular product. [3] * **CO4:** Describe the comparison of conventional and microwave processing of food. [3] *
31.	**UGFT 601**	**Unit operation in the food industry**	**CO-1:** Acquire knowledge of size reduction, evaporation, drying, fluid flow, and food freezing. [2] * **CO-2:** Understand the basic components of different process equipment and the unit operation associated with them. [2] * **CO-3:** Apply a solid scientific understanding of new food and bioproduct unit operations/ processes for food and bioproducts. [4] *
32.	**UGFT 602**	**Food quality assurance**	**CO-1:** Students will understand the basics of food safety, the implementation of HACCP, the importance of TQM in the food industry, different ISO series and their uses, importance of auditing and accreditation in the food industry. [4] * **CO-2:** Understand the role of food standards and regulations in maintaining food quality. [2] * **CO-3:** Demonstrate detailed knowledge of the requirements for compliance with national and international food safety legislation. [3] *
33.	**UGFT 603**	**Internship**	**CO1:** Students get exposed to the actual working environment and enhance their knowledge and skill from what they have learned in college. [3] *

			CO2: Students will learn about different equipment and instruments used in industry. [3] * **CO3:** Understand various ingredients, information about them, and their importance. [2] * **CO4**: Learn about different types of hazards, how they cause spoilage in food, and their sources. [3] * **CO5:** Learn to be punctual and develop self-confidence in them. [2] *
34.	**UGFTP 601 & UGFTP 602**	**Practical**	**CO1:** Study the working of the hammer mill and crushing roll. [2] * **CO2**: Study graders for grains, fruits, and vegetables. [2] * **CO3**: Study different material handling equipment. [2] * **CO4**: Describe the importance of quality control and Quality management systems in the food industry. [3] *

***Note:** Numbers in bracket [] indicates cognitive levels of revised Bloom Taxonomy as follows:

[1]: Remembering, [2]: Understanding, [3]: Applying, [4]: Analysing, [5]: Evaluating, [6]: Creating

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