Progressive Education Society's
Modern College of Arts, Science & Commerce, Ganeshkhind, Pune-16
Department of B. Voc. (Food Processing Technology)

PROGRAMME OUTCOMES

1. To provide judicious mix of skills relating to a profession and appropriate content of General Education.
2. To ensure that the students have adequate knowledge and skills, so that they are ready to work at each exit point of the programme.
3. To provide flexibility to the students by means of pre-defined entry and multiple exit points.
4. To integrate NSQF within the undergraduate level of higher education in order to enhance employability of the graduates and meet industry requirements. Such graduates apart from meeting the needs of local and national industry are also expected to be equipped to become part of the global workforce.
5. To provide vertical mobility to students coming out of 10+2 with vocational subjects.

Progressive Education Society's
Modern College of Arts, Science & Commerce, Ganeshkhind, Pune-16
Department of B. Voc. (Food Processing Technology)

Program Specific Outcome. (PSO)-UG

Sr. no.	Objectives/ Outcomes
1	To enrich students' knowledge, skills and train them in various branches of Food Processing Technology such as Food Science, Fundamentals of Microbiology, Food Chemistry & Nutrition, Food Processing & engineering, Food Biochemistry, Food processing operation, Food Safety & Hygiene, Food Microbiology, Communication skill & Technical English, Food Preservation, Food safety & standards, Harvest Management Of Fruit &Vegetables, Food Analysis, Applied Statics, Processing Of Spices & Flavoring Agents, Dairy Technology, Food Packaging Technology, Computer Application In Food Industry, Bakery & Confectionary Products, Meat, Fish & Poultry Processing, Product Development & Formulation, Waste Management In Food Industry, Management Principles & Business Ethics, Food Storage & Warehouse Technology, Quality Control & Quality Assurance, Food Laws & Regulations, Entrepreneurship Development.
2	To introduce the concepts of application of various processes in food & new product development in Food Processing Technology.
3	To understand Food Processing Technology concepts such as 1) Basic concepts in food science and different food preparation methods. 2) Processing of spices & flavoring agents, preparation of value added products from spices. 3) Processing & evaluation of quality parameter of meat, fish & poultry 4) Preparation of various bakery, confectionary products & to study various instruments used in it. 5) Analysis of milk & preparation of dairy products. 6) Preparation of reagents and qualitative & quantitative analysis of biomolecules 7) Preparation of nutrient media, Aseptic techniques, Isolation of bacterial cultures. 8) Different unit operations & instrument used in food processing. 9) Microbial analysis/ Quality Control testing/ sensory analysis of food samples. 10) Different food preservation methods, food packaging methods & food storage 11) Introduction to waste produced in food industry and its management methods. 12) Entrepreneurship Development, knowledge regarding functions of management in detail & study various food laws. 13) Basic computer and communication skills
4.	Students get expose to actual working environment and enhance their knowledge and skill from what they have learned in the college. (Industry training)

Progressive Education Society's
Modern College of Arts, Science & Commerce, Ganeshkhind, Pune-16
Department of B.Voc. (Food Processing Technology)

Course outcome for BvFt 101 Food Science (Credits 3)
F.Y (Food Processing Technology)
Sem I

Outcomes

1. Students will understand the basic concepts in food science and will get knowledge of the different food preparation methods.
2. They will understand the requirement of food with respect to energy, food and consumer safety, nutrients and their impact on health.
3. They will get the knowledge of nutritive value of cereals, pulses, nuts, fruits and vegetables, ant nutritional factors, germination of pulses, factors affecting cooking,
4. They will understand the processing of oilseeds, protein isolates, Texturized vegetable protein
5. Students will acquire the knowledge of structure and nutritive value and chemical composition of eggs, fish and meat.
6. They will understand the importance and advantages of health food like probiotics, prebiotics, organic food, nutraceuticals, functional foods

Course Specific Outcomes for BvFt 101 Food Science
F.Y (Food Processing Technology)

1.	**Unit I : Introduction of food Science**	1. Students will understood the basic concepts in food science 2. They will get knowledge of the different food preparation methods
2.	**Unit II: Basics of Food Requirement**	1. They will understand the requirement of food with respect to energy, food and consumer safety. 2. They will acquire knowledge of nutrients and their impact on health
3.	**Unit III: Composition and nutritive value of plant foods**	1. They will understand the structure of different cereals 2. They will get the knowledge of nutritive value of cereals, pulses, nuts, fruits and vegetables. 3. They will also learn anitinutritional factors in plant food, germination of pulses, factors affecting cooking, 4. They will acquire knowledge of processing of oilseeds, isolates Texturised vegetable protein
4.	**Unit IV: Composition and Nutritive Value of Animal Foods**	1. Students will acquire the knowledge of structure of eggs, fish and meat. 2. Students will learn about nutritive value and chemical composition of animal foods like eggs, fish, meat 3. They will get the knowledge of different properties of oils, sugars and their classification
5.	**Unit V: Health Foods**	1. They will understand the importance and advantages of health food like probiotics, prebiotics, organic food, nutraceuticals, functional foods.

Sem I

Course outcome for BvFt 102 Fundamentals of Microbiology (Credits 3)

F.Y (Food Processing Technology)

Sem I

Outcomes

1. Students will understand the basic concepts in microbiology, principle and working of different instruments used in lab along with its application.
2. They will get the knowledge about the how bacteria grows, different factors which affect their growth, different requirements for bacterial growth, different isolation and purification methods used for bacteria
3. They will understand the principle and importance of different staining methods used for bacteria.
4. They will gain knowledge on different sources, types of bacteria that cause spoilage in food, various changes that occur during spoilage in food depending on their nutrient content.
5. Students will understand different methods that can be used to prevent and detect bacterial spoilage of food.
6. They will understand importance of preservatives different methods and its importance.

Course Specific Outcomes for BvFt 102 Fundamentals of Microbiology

F.Y (Food Processing Technology)

1.	**Unit I : Introduction of Microbiology and methods in microbiology**	1. Students will understand basic concepts and history about Microbiology 2. They will gain knowledge about different instruments, media, staining techniques used in microbiology 3. They will gain knowledge about how bacteria grow in natural environment and in lab.
2.	**Unit II: Microbial Growth**	1. They will understand about growth of bacteria, different phases of growth curve, factors that affect growth of bacteria. 2. They will acquire knowledge different isolation and purification techniques for microorganisms
3.	**Unit III: Microbial food Spoilage**	1. They will understand the process of food spoilage by microorganisms. 2. They will gain knowledge on types of bacteria causing spoilage. 3. They will gain deep knowledge on spoilage of different food products. Different changes caused during spoilage
4.	**Unit IV: Control of Microbial growth in Food**	1. Students will gain knowledge about different types of preservation methods for food, and its application in food industry. 2. Students will understand about bio preservatives, non-thermal methods for control of microbial growth in food.

Sem I

Course outcome for BvFt 103 Food Chemistry and Nutrition (Credits 3)
F.Y (Food Processing Technology)
Sem I

Outcomes

1. Students will get introduced to Food chemistry and nutrition concept
2. Students will learn about classification and properties of carbohydrates and examples
3. They will understand different classification of amino acids based on Nutrition.
4. They will have knowledge about different test used for estimation of protein in food industry.
5. They will learn about classification of lipids, Rancidity, Autoxidation of fats.
6. They will acquire knowledge about basics of nutrition, balanced diet, vitamins and minerals
7. They will learn different food enhancers used in food industry..

1.	**Carbodydrates**	1. Students will learn about classification and properties of carbohydrates and examples. 2. They will acquire knowledge of role of carbohydrates and their importance in our body and food industry.
2.	**Amino acids**	1. They will understand different classification of amino acids based on Nutrition. 2. They will learn about different chemical test used for estimation.
3.	**Lipids**	1. They will learn about classification of lipids, Rancidity, Autoxidation of fats. 2. They acquire knowledge on physical and chemical properties of fats and oil.
4.	**Concept of Nutrition**	1. They will acquire knowledge about basics of nutrition, balanced diet, vitamins and minerals 2. They will learn metabolism of carbohydrates and protein in our body.
5.	**Flavours**	1. They will understand the basic tastes and food flavors 2. They will learn different food enhancers used in food industry.

Course Specific Outcomes for BvFt 103 Food Chemistry and Nutrition(Credits 3)
F.Y (Food Processing Technology)
Sem I

Course outcome for BvFt 104 Food Processing and Engineering
F.Y (Food Processing Technology)
Sem I

Outcomes

1. Students will understand the basic concepts in food processing and engineering and will get knowledge of the different instruments used in food processing and engineering.
2. They will understand different unit operations used in food processing.
3. They will understand the basic of heat transfer and energy requirement in food industry, physical properties of water, water activity.
4. They will understand different preservation methods used in food processing
5. They will learn different drying method and types of dryers.
6. They will acquire knowledge about freezing theory, different food freezers and quality of frozen food.
7. They will learn different designs and drawing of agitators, heat exchangers, evaporators and crystallizers.

Course Specific Outcomes for BvFt 104 Food Processing and Engineering

1.	**Unit I : Introduction and processing methods**	1. Students will understood the basic principles of food processing 2. They will get knowledge of the different unit operations used in food processing 3. They will understand the different preservation methods.
2.	**Unit II: Drying**	1. They will understand the basic concepts of drying. 2. They will learn properties of water, drying mechanism and factors affecting rate of drying 3. They will acquire knowledge of different drying equipments.
3.	**Unit III: Food Conversion Operations**	1. They will understand about equipments used in food conversion operation. 2. They will get knowledge of membrane separation filtration.
4.	**Unit IV: Food Preservation by Cooling**	1. They will acquire knowledge about basics of refrigeration, freezing and theory of freezing. 2. They will learn different kinds of freezers and effect of low temperature on food.
5.	**Unit V: Vessels and Agitators**	1. They will learn basic of mixing and theory of mixing. 2. They will understand design and drawing of different agitators.
6.	**Unit VI: Heat Exchangers and Evaporators**	1. They will understand design and drawing of different heat exchangers. 2. They will learn design and drawing of different evaporators employed in different food process operation.
7.	**Unit VII: Dryers**	1. They will understand design and drawing of different dryers used in food process operation.
8.	**Unit VIII: Crystallizers**	1. They will understand design and drawing of different crystallizers used in food process operation.

F.Y (Food Processing Technology)

Sem I

Course outcome for BvFt 105 Value education (Credits 1)

F.Y (Food Processing Technology)

Sem I

Outcomes

1. Student will learn about main objective of value education.
2. They will learn about different personal values like humility, ambition, self-motivation.
3. They will learn about team spirit, balancing of mind, alertness.
4. They will acquire knowledge different Professional values.

1.	**Value Education Introduction**	1. Students will get introduction to different values. 2. Student will learn about main objective of value education.
2.	**Personal values.**	1. They will understand importance of personal value. 2. They will learn about different personal values like humility, ambition, and self-motivation.
3.	**Social values**	1. They will learn importance of social value, sharing, responsibility. 2. They will acquire knowledge about units of society and different groups
4.	**Professional values**	1. They will acquire knowledge different Professional values. 2. They will learn about team spirit, balancing of mind, alterness.
5.	**Behavioral values**	1. They will understand the how to behave with others and also about different behavioral value. 2. They will learn about equity, role of religion, tolerance.

Course Specific Outcomes for BvFt 105 Value Education (Credits 1)

F.Y (Food Processing Technology)

Sem I

Course outcome for BvFt 106 Practical in Food Science (Credits 3)

F.Y (Food Processing Technology)

Sem I

Outcomes

1. Students will understand the structure of starches, gelatinization of starches.
2. They will understand the processes like roasting, tenderization, caremalisation, inversion.
3. They will acquire the knowledge about different tests for carbohydrates, protein and water in food.
4. They will acquire the knowledge about handling different instruments used in food.
5. They will understand different changes occurred during frying of oil and smoke point of oil.
6. They will understand the importance of egg white foam and their different stages used in food industry.

Course outcome for BvFt 107 Practical of Microbiology (credeits 3)

F.Y (Food Processing Technology)

Sem I

Outcomes

1. Students will 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. They will learn about different equipment's used in lab.
2. They will learn how to clean equipment's and sterilize them.
3. They will learn about handling of compound microscope.

4. They will understand different staining methods for bacteria and its importance.
5. They will understand difference between bacteria and fungi.
6. They will learn different methods used for isolation and enumeration of bacteria from food sample.

Course outcome for BvFt 108 Practical in Food Chemistry and Nutrition (Credits 3)

F.Y (Food Processing Technology)

Sem I

Outcomes

1. Students will get introduction different types of chemical reactions used for identification of carbohydrates
2. They will be able to estimate FFA content in given oil sample.
3. They will be able to perform estimation of ascorbic acid, protein and reducing sugar from food sample.
4. They will learn about protein Gluten and classification Wheat based on gluten content and will be able to estimate it from the given flour.
5. They will learn importance of moisture content and will learn to estimate it from food sample

Course outcome for BvFt 109 Practical in Food Processing and Engineering (Credits 3)

F.Y (Food Processing Technology)

Sem I

Outcomes

1. Students will understand the physical, mechanical, textural and biochemical properties of foods.
2. They will understand the working of centrifugal separation and oil extraction method.
3. They will acquire the knowledge about microwave heating of food materials and effect of microwave on food material.
4. They will acquire the knowledge about drying of food materials.
5. They will understand freezing of food and effect of freezing on food.
6. They will understand the determination of firmness of foods.

BvFt 110: Industry Training (Credits 5)

F.Y (Food Processing Technology)

Sem I

Outcomes

1. Students get expose to actual working environment and enhance their knowledge and skill from what they have learned in the college
2. Students will learn about different equipment's and instruments used in industry.
3. They will learn about different processing methods used in industry.
4. They will understand about various ingredients, information about them and their importance.
5. They will learn about different types of hazards, how they cause spoilage in food and their sources.
6. They will learn how to maintain daily record.
7. They will understand various processes carried out at a time in food industry.
8. They will understand importance of different test (physical, chemical & biological)
9. They will learn how to maintain personal hygiene in food industry.
10. They will learn to be punctual and develop self confidence in them.

Course outcome for BvFt 301 Principles of Food Preservation (Credits 3)
S.Y (Food Processing Technology)
Sem III

Outcomes

1. Students will understand the basic of heat transfer and energy requirement in food industry, physical properties of water, water activity.
2. They will learn different drying methods, quality of dried foods.
3. They will acquire knowledge about freezing theory, different food freezers, quality of frozen food and their packaging.
4. They will understand about different heat preservation techniques like pasteurization, sterilization, aseptic processing, UHT, thermal resistance of microorganisms.
5. They will get the knowledge about irradiation with respect to sources, units, doses, effect on microorganisms and quality of irradiated foods, consumer safety.

6. They will understand about the basics, working principle, applications of high pressure processing method used in food industry

Unit wise Outcomes for BvFt 301 Principles of Food Preservation (Credits 3)

S.Y (Food Processing Technology)

1.	**Introduction**	1. Students will understood the basic of heat transfer and energy requirement in food industry
2.	**Water in Foods**	1. They will understand physical properties of water, water activity, colligative properties 2. They will learn about microwave heating
3.	**Drying**	1. They will learn about drying theory, different drying methods. 2. They will understand the quality of dried products
4.	**Freezing**	1. They will acquire knowledge about basics of refrigeration freezing, theory of freezing, ice nucleation 2. They will learn different kinds of freezers, quality of frozen foods, defects and packaging of frozen foods.
5.	**Heat Preservation**	1. They will understand the different heat preservation techniques 2. They will learn about thermal resistance of different microorganism.
6.	**Food Irradiation**	1. They will get the knowledge about irradiation with respect to sources, units, doses, effect on microorganisms 2. They will understand the quality of irradiated food, consumer safety.
7.	**Non-thermal food preservation**	1. They will understand about the basics, working principle, applications of high pressure processing method used in food industry.

Sem III

Course outcome for BvFt 302 Food Safety Standards (Credits 3)

S.Y (Food Processing Technology)
Sem III

Outcomes

1. Students will understand the basic of food safety, implementation of HACCP, importance of TQM in food industry, different ISO series and their uses, importance of auditing and accreditation in food industry.
2. They will learn which microorganisms cause spoilage, assessment of food based on microbial quality, microbial assessment of foods.
3. They will acquire knowledge about sampling and it types, its implementation in food industry.
4. They will understand about different steps used for detection of foodborne pathogens.
5. They will get the knowledge about qualitative and quantitative methods used for water analysis, detection of coliforms in water sample.
6. They will understand about assessment of surface sanitation by using different components, its types and importance of it in industry.
7. They will learn about different laws for food safety and FSSAI standards.
8. They will understand different types of foods: organic food, genetically modified foods.
9. They will learn about new pathogen that causes food spoilage, recent outbreaks due to food spoilage.
10. They will gain knowledge on importance of packing, nutrient labeling and product labeling.

Unit wise Outcomes for BvFt 302 Food Safety Standards (Credits 3)

1.	Food Safety Management Tools	1. Students will understood the basic concept in food safety, its prerequisites 2. They will gain knowledge on importance of HACCP, TQM, IOS and its series, risk analysis 3. They will gain knowledge about auditing and accreditation in food industry.
2.	Microbiological criteria	1. They will understand about microbial risk assessment, their limits for processed foods and water. 2. They will gain knowledge on how microbial spoilage occurs in different foods. 3. They will understand how sampling is carried out in food industry, types of sampling and its class attribute. 4. Students will understand how to detect food borne pathogen, different methods used. 5. They will acquire knowledge on importance of water analysis and its methods. 6. They will gain knowledge on assessment of surface analysis, its methods and importance in food industry, importance of personal hygiene in food industry.
3.	Food Laws and Standards	1. They will learn about FSSAI and various mandatory and voluntary laws related to foods. 2. They will come to know global scenario of food laws and its importance.
4.	Recent Concerns	1. They will acquire knowledge on new and emerging pathogens. 2. Students will gain knowledge on packing, labeling of foods. 3. They will understand about organic foods and genetically modified foods. 4. They will understand about recent outbreaks and new approach to food safety.

S.Y (Food Processing Technology)

Sem III

Course outcome for BvFt 303 Post Harvest Management of Fruits and vegetables (Credits 3)

S.Y (Food Processing Technology)
Sem III

Outcomes

1. Students will understand the importance, current status, nutritional composition and reasons of spoilage of fruit and vegetables.
2. They will learn different preservation methods such as pasteurization, sterilization, canning, freezing, refrigeration etc.
3. They will get the knowledge about processing of canning, spoilage of canned food, different packaging materials used for canned food.
4. They will learn about processing of different fruits and vegetables product like fruit beverages, squash, cordial, nectar, jam, jelly, marmalade and defects in preparation of products.
5. They will learn the processing and types of different pickles, chutney, sauces and tomato products.
6. They will get knowledge about drying and dehydration of fruit and vegetable.
7. They will learn processing of tea, coffee and cocoa beans like selection, cleaning, sorting, fermentation, pulverization, drying.

Unit wise Outcomes for BvFt303 Post Harvest Management of Fruit and vegetables (Credits 3)

1.	**Introduction**	1. Students will understood the impotence, nutritional composition of fruit and vegetables, current status of fruit and vegetables processing in India 2. They will get knowledge about spoilage, reasons of spoilage of fruit and vegetable and need of preservation 3. They will learn different preservation methods like pasteurization, sterilization, and canning, freezing, refrigeration.
2.	**Canning**	1. They will learn the processing of canning, factors affecting on canning 2. They will learn different type of spoilage in canned food, selection of packaging materials for canning.
3.	**Fruit Beverages**	1. They will learn about processing of fruit beverages like selection, cleaning, extraction, filtration and clarification. 2. They will understand the processing and preservation of different fruit beverages like juice, squash, cordial, nectar, RTS.
4.	**Jam, Jelly and Marmalades**	1. They will get knowledge about processing and types of jam, Jelly, and marmalade 2. They will learn the defects in preparation of jam, jelly and marmalade.
5.	**Pickles, Chutney and Sauces**	1. They will learn about processing and type of pickles, chutney and sauces 2. They will understand the causes of spoilage in pickles, chutney and sauces.
6.	**Tomato Products**	1. They will get the knowledge about quality of tomato and tomato processing 2. They will learn the processing technology for different tomato products like tomato puree, paste, sauces, ketchup, and soup.
7.	**Dehydration of Fruit and vegetable**	1. They will understand about dehydration and drying 2. They will learn about sun drying and mechanical dehydration by using different dryers for the preservation of fruit and vegetable.
8.	**Tea, Coffee and Cocoa**	1. They will learn about processing of tea, coffee and cocoa like selection, cleaning, drying, fermentation, pulverization, ect

S.Y (Food Processing Technology)
Sem III

Course outcome for BvFt 304 Food Analysis (Credits 3)

S.Y (Food Processing Technology)

Sem III

Outcomes

1. Students will understand the techniques of food analysis viz. gravimetric colorimetric, chromatographic with their working principles and application.
2. They will learn different physical chemical and rheological properties of foods.
3. They will acquire knowledge about sensory attributes, facilities for sensory evaluation sensory evaluation methods of food.
4. They will gain knowledge about panel members, their selection, types and tasks.
5. They will learn about sampling procedure for sensory evaluation, application of consumer tests.
6. They will learn statistical testing, accuracy and precision of sensory data and correlation between instrumental and sensory measurements.

Unit wise Outcomes for BvFt 304 Food Analysis (Credits 3)

S.Y (Food Processing Technology)

Sem III

1.	Techniques of analysis	1. Students learn about principle and working of various techniques used in food technology. 2. They learns techniques like gravimetry, titrimetric, colorimetry, spectroscopy and chromatography in detail.
2.	Properties of food	1. Students will understand various physical properties food like shape, size, texture, angle of repose, density, volume etc. 2. They will understand the chemical composition of food i.e. carbohydrate, proteins, fats, vitamins, minerals etc. 3. They will understand rheological properties of food.
3.	Analysis of various food	1. Students will learn about qualitative and quantitative analysis of various food constituents using various methods. 2. The effect of packaging on food composition is also studied. 3. They will understand various sensory attributes required for sensory evaluation of food.
4.	Texture profile; selection of panelists &its type.	1. The student come to know about various forms of food texture like viscosity, softness, gumminess, crunchiness etc., criteria for selection of trained panelist and types of panels suitable for different tasks and methods.
5.	Sensory analysis	1. Students get familiar with design of sensory analysis laboratory. 2. They will understand the consumer tests that are useful in development of the product.
6.	Analysis of sensory data.	1. Students will understand to collect sensory data. 2. They will understand terms like mean, median, mode and range which will help them to analyze the data which they have collected.
7.	Statistical testing	1. Students learn ANOVA method for interpreting their sensory data 2. They will understand correlation between instruments used and sensory measurement methods used in order to improve the product, from the results of ANOVA.

Course outcome for BvFt 305 Applied Statistics (Credits 1)

S.Y (Food Processing Technology)
Sem III

Outcomes

1. Students will get introduction to statistics and concepts used in statistics.
2. Student will be able to draw different types of diagrams, graphs and solve the sums related to mean, median, mode.
3. Students will get introduced to concept of Null Hypothesis and ANOVA

1.	**Introduction to statistics**	1. Students will get introduction to statistics, data and is types. 2. Student will be able to draw different types of diagrams, graphs.
2.	**Population, sample, sampling methods (SRS, Stratified, sampling)**	1. They will get introduce to population and sampling methods.
3.	**Mean, Median, Mode**	1. They will be able to solve sums related to mean, median, mode. 2. They will the use of statistics in food industry.
4.	**Mean Deviation, Variance, Standard Deviation and Coefficient of variation as measures of dispersion**	1. They will acquire knowledge about deviation and variance and its use.
5.	**Definition, merits and demerits of Non-random sampling and Random Sampling. Concept of Standard Error. Basic concepts used in tests of Significance like Null Hypothesis,**	1. They will understand concept of sampling 2. They will get introduced to the concept of Null hypothesis and standard error.
6.	**ANOVA**	1. They will get introduced to one way and two way ANOVA concept.

Course Specific outcome for BvFt 305 Applied Statistics (Credits 1)

S.Y (Food Processing Technology)

Sem III

Course outcomes for BvFt 306 Practical in Principles of Food Preservation (Credits 3)

S.Y (Food Processing Technology) Sem III

Outcomes

1. Students will understand the drying of fruit and vegetables.
2. They will acquire the knowledge of different parameters during rice processing.
3. They will understand the preservation of fruits and vegetable by pickling.
4. They will learn to preserve the fruit by sugar by preparing squash.
5. They will study to identify different types of packaging material used in the food industry.
6. They will acquire about fermentation, blanching and examination of canned pineapple.

BvFt 307 Practical in Food Safety Standards (Credits 3)

S.Y (Food Processing Technology) Sem III

Outcomes

1. Students will understand to prepare different types of media with its importance.
2. They will learn different methods for microbial examination in food sample and detection methods.
3. They will acquire knowledge about water analysis, personal hygiene, surface analysis and methods used in it.
4. They will learn how to calculate aerial microbial count and its importance, various biochemical tests used for pathogens.
5. They will learn implementation of HACCP and ISO.

Course outcome for BvFt 308 Pr. In Post-Harvest Management of Fruit and Vegetable (Credits 3)

S.Y (Food Processing Technology) Sem III

Outcomes

1. Students will understand the determination of moisture content present in fruit and vegetables, evaluation of quality parameters of fruit and vegetables like color, taste, texture, flavour.
2. They will learn to control the enzymatic browning in fruit and vegetables by using different method like blanching, salt solution, acid solution, normal water solution, refrigeration.
3. They will understand the drying of fruit and vegetables, pretreatments of fruit and vegetables.
4. They will understand processing of different fruit and vegetable products like jam, jelly, squash, mango bar, tomato ketchup.
5. They will learn osmotic dehydration of fruit and vegetables by using salt and sugar.
6. They will acquire knowledge about sensory evaluation, sensory evaluation of processed product.

Course outcome for BvFt 309 Practical on Food Analysis (Credits 3)

S.Y (Food Processing Technology)

Sem III

Outcomes

1. Students will understand the different quality analysis of milk, fat, water used in food.
2. They will learn to determine the gluten content from wheat sample.
3. They will acquire knowledge about estimation of protein, fat of food.
4. They will gain knowledge about separation and identification of amino acids by paper chromatography.
5. They will learn to determine iodine value, saponification value free fatty acids of fats and oils
6. They will learn to determine the titratable acidity, TSS and pH of fruit juice.

BvFt 310 Industry Training (Credits 5)

S.Y (Food Processing Technology)

Sem III

Outcomes

1. Students will learn about different techniques, standard procedures that are followed in industry.
2. They will learn about different preservation methods used in industry.
3. They will understand about different food laws, different certifications required for food industry.

4. They will learn about how auditing and accreditation is carried out.
5. They will learn how to do physical, biochemical and microbial analysis of raw materials and final products.
6. They will understand study about shelf life determination.
7. They will learn about cost estimation, sales and marketing of food products.
8. They will acquire knowledge about packaging material testing and their use in for different food products.
9. They will learn about labeling of food products.
10. They will understand how to maintain data and carryout statistical analysis of food products.

Course outcome BvFt 501: Bakery & Confectionary products (Credits 3)

T.Y (Food Processing Technology)

Sem V

Outcomes

1. Students will understand the basic terms and concepts related to bakery and confectionary products.
2. Students will gain the knowledge related to various machineries used in bakery.
3. Learn the role of different ingredients in bakery products.
4. To know the manufacturing details of bakery and confectionary products
5. Learn about the different parameters for setting up bakery unit.
6. Understand cost components like fixed cost and learn how to do the costing of the product

Course Specific Outcome BvFt 501: Bakery & Confectionary products (Credits 3)

T.Y (Food Processing Technology) Sem V

Course outcome for BvFt 502 Meat, Fish and Poultry Processing (Credits 3)

T.Y (Food Processing Technology)

Sem V

Outcomes

1	**Inroduction to Bakery And confectionery**	1. Students learn basic terms and concepts related to bakery 2. Obtain knowledge current demand of bakery products in market. 3. To gain the knowledge related to various machineries used in bakery
2.	**Hygiene**	1. Understand importance of hygiene in industry 2. Know about care to be taken in order to maintain hygiene
3.	**Bakery Material & Products**	1. Learn about properties, role of basic ingredients in various products. 2. Understand about balancing the recipe and formulation of products 3. To know the characteristics of different bakery products like bread, cake. 4. Learn about different methods of preparation of various products. 5. To know about faults in products and respective remedies
6.	**Introduction to Confectionery**	1. Understand various types of confectioneries 2. To know the manufacturing details of confectionary products. 3. Learn about the different parameters for setting up bakery unit.
7.	**Characteristics of Confectionery Products & evaluation**	1. They will learn the different characteristics of confectionery products 2. They will learn the evaluation of different confectionery products.
8.	**Role Required for confectionery**	1. Learn about the role of ingredients used for confectionary manufacture.
9.	**Equipment Maintenance and Storage**	1. Study about working of various equipment and their maintenance. 2. Learn about different types of oven and their details. 3. Understand the importance of maintenance and its type.
10.	**Costing**	1. Understand cost components like fixed cost and learn how to do the costing of the product

1. Students will understand the basic of meat, fish and poultry processing and importance of meat processing for entrepreneurship development.
2. They will learn different meat processing and preservation methods.
3. They will acquire knowledge about different quality parameters of meat and their use to check freshness of meat.
4. They will understand about principles of fish processing and different fish processing methods.
5. They will get the knowledge about different quality parameters of fish suitable for processing.
6. They will understand different methods of poultry processing and quality parameters of poultry.
7. They will learn importance of egg production and different egg preservation methods such as pickling and canning.

Course Specific Outcome for BvFt 502 Meat, Fish and Poultry Processing (Credits 3)

T.Y (Food Processing Technology)

1.	**Introduction**	1. Students will understand the importance of meat processing for entrepreneurship development.
2.	**Methods of meat processing**	1. They will understand different methods of meat processing. 2. They will learn about tumbling, massaging, curing and smoking of meat
3.	**Quality of meat**	1. They will learn about different quality parameters of meat which are important to check freshness of meat. 2. They will learn about visual identification, juiciness, firmness and tenderness of meat.
4.	**Preservation of meat**	1. They will learn different preservation methods of meat such as canning, pickling, drying, chilling, freezing and irradiation.
5.	**Principle and methods of fish processing**	1. They will understand classification of fish depending on water source and fat concentration. 2. They will understand the basic principle of fish processing. 3. They will learn about different fish processing methods such as salting, curing, pickling, cooking, canning and drying.
6.	**Quality of fish suitable for fish processing**	1. They will get the knowledge about different quality parameters of fish such as appearance, odour, colour, texture. 2. They will learn composition of fish.
7.	**Methods of Poultry processing**	1. They will understand about different methods of poultry processing.
8.	**Quality of poultry**	1. They will learn about contamination of poultry meat. 2. They will understand different quality parameters of poultry meat.
9.	**Importance of egg production**	1. They will understand egg structure, composition, quality characteristics. 2. They will learn different preservation methods of egg such as pickling and canning.

Sem V

Course outcome for BvFt503 Product Development and Formulation (Credits 3)

T.Y (Food Processing Technology)

Sem V

Outcomes

1. Students will understand the concept of new product development, type of new product and need of new product development.
2. They will learn different objectives of creative product and innovative products, different stages involved in new product development like idea generation, idea screening, business analysis, product development and commercialization.
3. They will get knowledge about ingredients used for product development, quality and quantity of ingredients, cost of ingredients, nutritional composition of new product like (carbohydrates, protein, fat, minerals, fibers), standard specification as per laws and regulations for ingredients.
4. They will understand about sensory evaluation, need and impotence of sensory evaluation, methods of sensory evaluations, type of sensory evaluation, selection of panelist, result of sensory evaluation.
5. They will get the knowledge about product design and process development for the new product development, steps involved in product design, factors affecting on the product design, selection of prototype for product development.
6. They will understand about the market strategy, selection of market for product launching, consumer testing by market survey.
7. They will learn the shelf life study of new product by using different test like physical, chemical and microbiological test of product, successful market testing and commercialization of new product in India.

Course Specific Outcomes for BvFt503 Product Development & Formulation (Credits3)

T.Y (Food Processing Technology)

Sem V

Course outcome for BvFt 504 Waste Management in Food Industry (Credits 2)

T.Y (Food Processing Technology)

Sem V

Outcomes

1. Students will get introduction to waste produced in food industry and its management methods.
2. They will acquire knowledge regarding treatment methods for liquid waste treatment.
3. They will acquire knowledge about bio filters and ion exchange treatment of drinking water.
4. They will learn the methods for recovery of biological materials from different food processing industry.

1.	**Introduction**	1. Students will understood the concept of new product development, need and importance of new product development, objectives of new product development
2.	**Phase in new product development**	1. They will learn the different stages involved in new product development like idea generation, idea screening, business analysis, product development, market testing, commercialization 2. They will learn about planning and management for product development
3.	**Product idea**	1. They will understand the source of idea, selection of idea, selection of processing method, market testing by market survey. 2. They will learn to set the quality of final product, creating specific design for new product on the basis of quality and quantity of raw material, cost of raw material.
4.	**Ingredients Technology**	1. They will acquire knowledge about ingredients or raw materials used for new product development, limits and specification of ingredients as per food laws and regulations like limits of color, flavor. 2. They will learn set the nutritional composition of final product as per consumer demand like rich in protein, less in fat, baby food, space food etc.
5.	**Sensory evaluation**	1. They will understand about sensory evaluation, need and impotence of sensory evaluation 2. Methods of sensory evaluations, subjective and objective method, type of sensory evaluation, scoring, rating, difference sensory evaluation, selection of panelist, result of sensory evaluation..
6.	**Process Development**	1. They will get the knowledge about processing, methods of processing, selection of method, factor affecting on process development. 2. They will understand the product testing, technical testing, chemical testing, microbiological testing, cost testing, and financial analysis.
7.	**Consumer testing, Test market survey**	1. They will understand about concept of consumer testing, door to door market survey, market testing, promotions, selection of specific market according to type of product. 2. feedback of consumers, suggestions of consumer, implementation in product development,
8.	**Shelf life study, manufacturing**	1. They will learn the shelf life study of new product by using different test like physical, chemical and

		microbiological test of product, different manufacturing process, selection specific process, effect of processing on quality of product. 2. Successful market testing and commercialization of new product in India.

Course Specific Outcomes for BvFt 504 Waste management in Food industry (Credits2)

T.Y (Food Processing Technology)

Sem V

Course outcome for BvFt 505: Management Principles & Business Ethics (Credits 2)

1.	Introduction	1. Students will get introduction to waste produced in food industry and its management methods. 2. They will learn characteristics of food waste and waste disposal methods.
2.	Treatment methods for liquid wastes from food process industries	1. They will acquire knowledge regarding treatment methods for liquid waste treatment. 2. They will be able to explain each treatment with the help of diagram and steps involved init.
3.	Treatment methods of solid wastes.	1. They will learn solid waste treatment methods and design for the same. 2. They will acquire knowledge regarding incerinators and landfill digestor.
4.	Biofilters and Bioclarifiers, Ion exchange treatment of waste water, Drinking-Water treatment, Recovery of useful materials from effluents by different methods.	1. They will acquire knowledge about biofilters and ion exchange treatment of drinking water. 2. The will also learn methods used for recovery of useful materials from effluents.
5.	Water quality, treatment and recycle. BOD, COD and definitions, Discharge limits for effluents.	1. They will understand concept BOD and COD. 2. They will get introduced to discharge limits of water set by govt. organisation.
6.	Value added products from of agri food processing industry	1. They will get introduced different value added products from food industry.
7.	Recovery of biological from dairy, meat, fish and poultry processing industry	1. they will learn the methods for recovery of biological materials from different food processing industry
8.	Case studies: Cane Sugar waste, molasses for alcohol, baggasse for paper pulp, chemicals, bioethanol, cogeneration. Other processes including vermi culture.	1. They will have case studies regarding production of ethanol, production of products using waste.

T.Y (Food Processing Technology)

Sem V

Outcomes

1. Students will get introduction to management author's and their contribution.
2. They will acquire knowledge regarding functions of management in detail.

3. They will acquire knowledge about various leadership style and motivational techniques used in an organization.
4. They will be aware about sexual harassment and relevance of business ethics.

Course outcome for BvFt 506 Practical on Bakery & confectionary product (Credits3)

T.Y (Food Processing Technology)

Sem V

Outcomes

1. Students will learn to prepare different types of bread like whole wheat bread, white bread & understand the changes occur during baking.
2. Learn to prepare other baked products like pizza base, bread sticks.
3. Learn to prepare flour confectionary product like sponge cake, swiss roll.
4. Understand preparation technique for icing.
5. Learn to prepare skill based products like puff pastry.
6. Understand working of different equipment used in bakery.
7. Understand working of different types of ovens.

Course outcome for BvFt 507 Practical in Meat, Fish and Poultry Processing (Credits 3)

T.Y (Food Processing Technology)

Sem V

Outcomes

1. Students will understand the survey of different meat processing industries and different processed products from meat, fish and poultry.
2. They will understand the slaughtering process and cleaning and sanitation of meat and meat plant.
3. They will acquire the knowledge about different preservation methods such as canning and pickling.
4. They will acquire the knowledge about how to check quality of fish for processing.
5. They will understand how to produce fishmeal protein and fishmeal powder.
6. They will understand the processing of chicken and test quality.
7. They will learn the process of canned egg pickle.

Course outcome for BvFt 508 Pr. on Product development and formulation (Credits3)

T.Y (Food Processing Technology)

Sem V

Outcomes

1. Students will understand the how to generate new product ideas, product concept and product design. They will learn preparation of new product by using different processing methods.
2. They will learn ingredients technology, limits of ingredients, benefits of ingredients, preparation of new product having a good nutritional value such as preparation of oat muffins, beetroot jam.
3. They will understand the prototype development, specification of products, and standard procedure for new product development like preparation of bottle gourd basundi.
4. They will understand processing methods, nutritional composition, and health benefits of garden cress kheer.
5. They will learn processing of drinks such as coriander seed coffee. They will learn processing of tea drop having different flavor.
6. They will acquire knowledge about sensory evaluation, type of sensory evaluation, use of sensory evaluation, and sensory evaluation of processed product.
7. They will learn shelf life study of new product, test of quality parameters, and physical, chemical and microbiological test of product.

Course outcome for BvFt 509 Pr. on Waste Management in Food Industry (Credits 2)

T.Y (Food Processing Technology)

Sem V

Outcomes

1. Students will get introduction to waste produced in food industry and its management methods.
2. They will acquire knowledge regarding treatment methods for liquid waste treatment.
3. They will be able to perform analysis of wastewater and interpret the result.
4. They will prepare membrane filter and do the filtration process and analysis the filtered water
5. They will isolate pectin and do its analysis.

BvFt 510 Project and Industry Training (Credits 6)

T.Y (Food Processing Technology)

Sem V

Outcomes

1. Students will learn about how to search research articles and reviews related to particular food products.
2. They will learn how to implement their ideas in innovative product development.
3. They will understand the process of product standardization.
4. They will acquire knowledge about sensory evaluation methods used in industry.
5. They will learn the quality control of products.
6. They will learn about cost estimation, sales and marketing of food products.
7. They will learn about maintenance of different equipment's and their standardization.
8. They will understand the procurement of raw material.
9. They will learn SOPs for different equipment's and instruments.
10. They will understand about different food laws, different certifications required for food industry.
11. They will learn about how auditing and accreditation is carried out.
12. They will acquire knowledge about packaging material testing and their use in different food products.
13. They will learn about nutritional labeling of food products.
14. They will understand how to maintain data and carryout statistical analysis of food products.