

**STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI**

**COURSE PLAN (November 2024 – April 2025)**

**Department** : FOOD PROCESSING AND QUALITY CONTROL  
**Name/s of the Faculty** : Dr. ANBU MALAR. M  
**Course Title** : FOOD ANALYSIS AND INSTRUMENTATION - I  
**Course Code** : 23VF/VM/FI46  
**Shift** : II

**COURSE OUTCOMES (COs)**

COs	Description	CL
CO1	Gain knowledge regarding different method of analysis would make them skillful for analytical work in research and food industry.	K1
CO2	Comprehend fundamentals of qualitative and quantitative analysis.	K2
CO3	Analyse techniques of various food component.	K3
CO4	Examine the applications of different analytical tools which are used in food industry.	K4
CO5	Make their career in quality control labs in food industry.	K5, K6

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Nov 18 – 25, 2024 (Day Order 1-6)	1	1.1 Water activity and its significance in food quality.	K1-K3	2	CO 1-5	Lecture & PPT	Assignment
		1.3 pH meter – Principle, parts, procedure, types, uses and examples.	K1-K4	1	CO1-5	Demonstration	Chart preparation
		<b>Practical:</b> Estimation of pH in beverages. Estimation of acetic acid in vinegar.	K2-K6	3	CO1-5	Demonstration	Testing of Samples

Nov 26- Dec 3, 2024 (Day Order 1 to 6)	1	1.2 Preparation of solutions, percentage by weight, volume, strength, normality, molarity, ppm, ppb, serial dilution and buffers..	K2-K5	3	CO 1-5	Lecture & PPT	Preparation of solutions.
		<b>Practical:</b> Reactions of carbohydrates – monosaccharides. Reactions of carbohydrates – disaccharides. Quantitative analysis of carbohydrates – Estimation of glucose by Benedict’s Method.	K2-K6	3	CO1-5	Demonstration	Identification of Carbohydrates
Dec 4-11, 2024 (Day Order 1 to 6)	2	2.1 Simple classification of carbohydrates – monosaccharides, disaccharides and polysaccharides.	K1-K4	1	CO 1-5	Lecture & Demonstration	Quiz
		2.2 Physico – chemical properties and reactions of monosaccharides, disaccharides and polysaccharides. Non – enzymic browning. Modified food starch	K1-K5	2	CO 1-5	Lecture & Demonstration	PPT presentation
		Practical: Reactions of amino acids. Qualitative analysis of proteins (casein and egg albumin).	K2-K6	3	CO 1-5	Demonstration	Sample Identification
Dec 12-19, 2024 (Day Order 1 to 6)	2	2.3 Simple classification of proteins, Protein Denaturation - Theory of denaturation.	K1-K4	1	CO 1-5	Lecture & Demonstration	Quiz
		2.3 Amino acids – Physico – Chemical properties of amino acids, Classification of amino acids, Chemical reactivity of amino acids – Reaction with ninhydrin and other	K1-K5	2	CO 1-5	Lecture & Demonstration	Video Making

		<p>reactions.</p> <p>Practical: Extraction and estimation of starch. Extraction and estimation of casein. Extraction and estimation of egg albumin.</p>	K2-K6	3	CO 1-5	Demonstration	Sample Evaluation
Dec 20, 2024 (Day Order 1)	3	3.1 Simple classification of lipids – Simple, Compound and Derived.	K2-K5	1	CO 1-5	Lecture	PPT presentation
Jan 3 – 7, 2025 (Day Order 3 to 6)	3	<p>3.1 Simple classification of lipids – Simple, Compound and Derived.</p> <p>3.2 Fats and Oils – Saturated, Unsaturated and Essential fatty acids.</p> <p>Practical: Estimation of acid number in oils/butter. Determination of saponification value in oils and fats. (Demonstration)</p>	<p>K2-K5</p> <p>K1-K4</p> <p>K2-K6</p>	<p>1</p> <p>1</p> <p>3</p>	<p>CO 1-5</p> <p>CO 1-5</p> <p>CO 1-5</p>	<p>Lecture</p> <p>Lecture &amp; Demonstration</p> <p>Demonstration</p>	<p>PPT Presentation</p> <p>Oil testing</p> <p>Evaluation of the sample</p>
Jan 8 – 17, 2024 (Day Order 1 to 6)	3	<p>3.2 Fats and Oils – Saturated, Unsaturated and Essential fatty acids.</p> <p>3.3 Characterization of fats and oils – Water content, Density, Refractive index.</p> <p>Practical: Determination of iodine value in oils and fats.</p>	<p>K1 –K4</p> <p>K1 –K4</p> <p>K2 – K6</p>	<p>1</p> <p>2</p> <p>3</p>	<p>CO 1-5</p> <p>CO 1-5</p> <p>CO 1-5</p>	<p>Lecture</p> <p>Lecture</p> <p>Demonstration</p>	<p>Scrap book preparation</p> <p>Sample Testing</p> <p>Evaluation of the sample</p>
Jan 18 - 23, 2025	<b>C.A. Test – I</b>						

Jan 24 -31, 2025 (Day Order 1 to 6)	3	3.4 Melting point, Solid – Liquid ratio, Titre, Colour, Iodine value, Acetyl value, Acid value.	K1-K4	3	CO 1-5	Lecture	PPT Presentatio n
		Practical: Estimation of vitamin C in lime/gooseberry/sweet lime.	K2 – K6	3	CO 1-5	Demonstr ation	Evaluation of the food sample
Feb 3-8, 2025 (Day Order 1 to 6)	3 & 4	3.3 Saponification value, Reichert – meissl value..	K1-K4	1	CO 1-5	Lecture	PPT Presentatio n
		4.1 Estimation of vitamin C in lime/gooseberry/sweet lime.	K2-K5	2	CO 1-5	Lecture	Assignmen t
		Practical: Extraction and estimation of Vitamin E in curry leaves.	K2-K6	3	CO 1-5	Demonstr ation	Extraction and Identificati on of nutrient.
Feb 10– 18, 2025 (Day Order 1 to 4)	4	4.2 Extraction and estimation of Vitamin E in curry leaves.	K6	3	CO 1-5	Lecture	Extraction from various other samples.
		Practical: Extraction and estimation of carotenes in carrot / papaya.	K2-K5	3	CO 1-5	Demonstr ation	Extraction and Identificati on of nutrient.
Feb 19- 26, 2025 (Day Order 1-6)	4	4.3 Extraction and estimation of carotenes in carrot / papaya	K2-K5	3	CO 1-5	Lecture	Extraction from various other samples.
		Practical: Specific gravity, fat content and lactose content of milk.	K2-K6	3	CO 1-5	Demonstr ation	Extraction and Identificati on of nutrient.
Feb 27- Mar 6, 2025	4 & 5	4.3 Extraction and estimation of carotenes in carrot / papaya	K2-K5	1	CO 1-5	Lecture	Test Sample testing

(Day Order 1 to 6)		5.1 Analysis of milk: specific gravity, fat content (Gerber's method), lactose content (volumetric).  Field Visit: Visit to a NABL accredited lab for food analysis methods.  Practical: Analysis of condensed milk: Total solids, sucrose, lactose / fructose. (Demonstration).	K2-K5  K6  K2-K6	2  6  3	CO 1-5  CO 1-5  CO 1-5	Lecture  Hands on learning  Demonstr ation	Report preparation  Evaluation on Quality of the sample.
Mar 7 – 11, 2025 (Day Order 1 to 3)	5	5.2 Analysis of condensed milk: Total solids, sucrose, lactose / fructose.  5.3 Analysis of cheese: water content, fat content, ash content, salt content.	K5 – K6  K5 – K6	2  1	CO 1-5  CO 1-5	Lecture & PPT  Lecture & PPT	Sample Testing  Sample Testing
Mar 12 –17, 2025	<b>C.A. Test - II</b>						
Mar 18 – 20, 2025 (Day 4 to 6)	5	Practical: Analysis of cheese: water content, fat content, ash content, salt content. (Demonstration).  Analysis of butter and curd. (Demonstration).	K2-K6	3	CO 1-5	Demonstr ation	Evaluation on Quality of the sample.
Mar 21 - 28, 2025 (Day Order 1 to 6)	5	5.4 Analysis of butter and curd.  Practical: Model Practicals	K5-K6  K2 – K6	3  3	CO 1-5  CO 1-5	Lecture  Testing of food samples	Sample Testing  Test
Mar 29- April 2, 2025 (Day Order 1 to 3)	<b>REVISION</b>						

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**COURSE PLAN (November 2024 – April 2025)**

**Department** : B.Voc Food Processing and Quality Control  
**Name/s of the Faculty** : Ms.Shantha Ashwin Kumar  
**Course Title** : Food Laws and Food Safety  
**Course Code** : 23VF/VM/FF46  
**Shift** : II

**COURSE OUTCOMES (COs)**

COs	Description	CL
CO1	Remember and recall various food laws and regulations applicable for food safety	K1
CO2	Identify specific regulations and laws to be followed and apply it for different purposes pertaining to food safety rights	K2, K3
CO3	Conduct home scale and lab scale tests to examine foods for detection of adulterants, additives	K4
CO4	Evaluate the compliance of foods to standards and report on the safety of the food produced.	K5
CO5	Design the process flow for drafting Sanitation standard operating procedures, HACCP plan, suggest the use of suitable additives while formulating new products.	K6

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Nov 18 – 25, 2024 (Day Order 1-6)	1.	1.1 Meaning & Concept of food safety – Physical, Microbial, Chemical, Nutritional	K1-K2	3	CO1-CO2	Power point presentation	Assignment
		<b>Practicals</b> 1. Study of sampling techniques from food processing establishments. 2. Estimation of Physical Impurities in Foods.	K1-K5	3	CO1-CO5	Practical	

Nov 26- Dec 3, 2024 (Day Order 1 to 6)	1	1.2 Awareness about pesticide residues and heavy metals in food 1.3 Origin of Food laws in India <b>Practicals</b> 3. Detection of adulterants in Turmeric powder & Chili powder 4. Detection of sodium carbonate in Flours, Sugar, Jaggery	K1-K2	3  3	CO1-CO2  CO1-CO5	Lecture with Power point presentation  Experimental work	Role play  Experimental Results
Dec 4-11, 2024 (Day Order 1 to 6)	2	<b>Food additives</b> 2.1 Definitions of Food Additives, Classification and Functions 2.2 Legitimate uses of Additives in foods, Intentional and Non Intentional additives <b>Practicals</b> 5. Detection of adulterants in milk and milk products 6. Detection of adulterants in ghee, oils	K1-K5  K1-K5	2  1  3	CO1-CO5  CO1-CO5	Lecture with discussion  Experimental Work	Case analysis  Experimental Results
Dec 12-19, 2024 (Day Order 1 to 6)	2	2.3 Additives such as preservatives (Class I and Class II preservatives as per FSSAI, antioxidants, emulsifiers, sequestrants, humectants, stabilizers enzymes as food processing aids <b>Practicals</b> 7. Rancidity tests in Fats – Peroxide value	K1-K6  K1-K5	3  3	CO1-CO5  CO1-CO5	Lecture with presentation  Experimental Work	Survey based activity.  Experimental Results
Dec 20, 2024 (Day Order 1)	2	2.4 Health effects of food additives	K1-K6	1	CO1-CO5	Focussed discussion	Presentation
Jan 3 – 7, 2025 (Day Order 3)	3	3.1 Definition, causes and effects of adulteration	K1-K3	2	CO2-CO4	Lecture with discussion	Case study presentation

to 6)							
Jan 8 – 17, 2024 (Day Order 1 to 6)	3	<b>3.2 Common Adulterants in food</b> - Chicory and starch in Coffee Powder, Non permitted Colours in Tea and Dhals, Jams, Jellies, Juices, Metanil yellow in Turmeric powder and Kesari Powder, <b>Practicals</b> 8. Determination of Iodine value in oils 9. Determination of moisture content of packed Foods	K1-K6	3  3	CO2-CO4	Lecture and experimental work	Practical
Jan 18 - 23, 2025	<b>C.A. Test – I</b>						
Jan 24 -31, 2025 (Day Order 1 to 6)	3	3.2 contd...Papaya seeds and rotten pepper in Pepper, Brick powder in Chilli Powder, Washing soda in Jaggery, 3.3 Rapid detection tools – Detect adulteration with Rapid test (DART) <b>Practicals</b> Vanaspathi in Ghee, Chalk Powder in Salt and Saccharin in Supari 10. Determination of titratable acidity of packaged Foods.	K1-K6  K1-K5  K1-K3	3  3	CO2-CO4  CO1-CO5	Lecture with pictorial representation	Model making  Practicals
Feb 3-8, 2025 (Day Order 1 to 6)	4.	<b>Food Safety Regulation Food Laws – FSS Act</b>  4.1 Food Safety and Standards Act (FSS) 2006 – History (PFA, FPO Acts etc), Principles, Responsibility enforcement, offences & penalties. <b>Practicals</b>	K1-K3	3	CO1-CO4	Lecture	Quiz



		11. Report of Project on food safety evaluation in foods sold in the locality 12. Detection of synthetic colours in colored foods	K1-K5	3	CO1-CO5	Experimental work	Experimental Results
Feb 10– 18, 2025 (Day Order 1 to 4)	4	4.2 FSSAI – laws & Regulation – Licensing & Registration (2011), Additives	K1-K3	1	CO1-CO4	Lecture	Case studies or Activity
Feb 19- 26, 2025 (Day Order 1-6)	4	4.3 FSSAI- Nutraceuticals/functional food (2016), Food Recall (2017), Packaging and Labelling (2011)  <b>Practicals</b> 13. Calculation of additive concentration in foods 14. Estimation of Sodium benzoate in processed foods	K1-K5	2	CO1-CO4	Lecture	Activity, Quiz
Feb 27- Mar 6, 2025 (Day Order 1 to 6)	4	4.4 FSSAI – Import export regulations, Quarantine Procedures <b>Practicals</b> 15. Demonstration of Household methods of detecting adulterants	K1-K4	2	CO1-CO4	Lecture	Presentation
Mar 7 – 11, 2025 (Day Order 1 to 3)	5.	<b>Food Laws and Regulatory bodies</b> 5.1 BIS Act, Essential Commodities Act, Consumer Protection Act, Agricultural Produce Act (AGMARK)	K1-K4	3	CO1-CO5	Discussion	Quiz
			K1-K5	3	CO1-CO5	Demonstration	Practical & Assignment
			K1-K5	3	CO1-CO5	Demonstration	Presentation

Mar 12 –17, 2025	<b>C.A. Test – II</b>						
Mar 18 – 20, 2025 (Day 4 to 6)	<b>5</b>	5.2 Basic Prerequisites – GHPs, GMPs, SSOPs	K1 – K6	3	CO1- CO5	Lecture with presentation	Activity
Mar 21 - 28, 2025 (Day Order 1 to 6)	<b>5</b>	5.3 HACCP – Concept and importance in food industry, Principles, Implementation of HACCP in Fruit/Vegetable, fermented food, Dairy, Bakery & meat processing industry <b>Practicals</b> 16. IMVic Test 17. Visit to food analysis lab	K1-K6  K1-K5	3  3	CO1- CO5  CO1- CO5	Lecture with Discussion	Case analysis and activity.  Visit Report
Mar 29- April 2, 2025 (Day Order 1 to 3)	<b>REVISION</b>						

**STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI**

**COURSE PLAN (November 2024 – April 2025)**

**Department** : B.VOC FOOD PROCESSING AND QUALITY CONTROL  
**Name/s of the Faculty** : DR. SUBHASHREE S & MS. SHANTHA ASHWIN KUMAR  
**Course Title** : Food Packaging  
**Course Code** : 23VF/VE/FP45  
**Shift** : II

**COURSE OUTCOMES (COs)**

COs	Description						CL
CO1	Know about the importance of food packaging responsible for extending shelf life.						K1,K2
CO2	Understand the types of packaging material utilized for food packaging						K2,K3
CO3	Select appropriate packaging material required for different types of foods.						K4
CO4	Evaluate the packaging material for quality parameters.						K5
CO5	To develop environmentally friendly food packaging material using natural materials, and edible in nature.						K6
Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Nov 18 – 25, 2024 (Day Order 1-6)	1	1.1 Definition, Need and History of food packaging.	K1-K2	2	CO1 - CO3	Lecture with discussion	Observation of packages and reporting
		1.2 Objectives and functions of packaging and packaging materials	K1-K2	3			
Nov 26- Dec 3, 2024 (Day Order 1 to 6)	1	1.3 Types of packaging- Primary, Secondary and Tertiary, packaging requirements	K1-K3	5	CO1 - CO3	Lecture with discussion	Observation of packages and reporting
Dec 4-11, 2024 (Day Order 1 to 6)	2	2.1 Paper: corrugated fiber board, flexible laminates; Glass containers, types of closures,	K1-K3	5	CO1 - CO3	Lecture & Market survey	Presentation and discussion

Dec 12-19, 2024 (Day Order 1 to 6)	2	Metals: Tin plate containers, Tin Free Steel (TFS), types of Cans, Aluminum Containers	K1-K3	5	CO1 - CO3	Lecture & Market survey	Presentati on and discussio n
Dec 20, 2024 (Day Order 1)	2	2.2 Plastics: types of plastic films, laminated plastic materials,	K1-K3	2	CO1 - CO3	Lecture & Market survey	Presentati on and discussio n
Jan 3 – 7, 2025 (Day Order 3 to 6)	2	2.2 Edible films, biodegradable plastics BPA in plastics	K1-K3	2	CO1 - CO3	Lecture and focused discussio n	Activity or presentati on
	3	Properties of packaging materials 3.1 Tensile strength, bursting strength, tearing resistance, puncture resistance	K1-K4	2	CO1- CO4	Lecture with video represent ation	Presentati on, Assignme nt
Jan 8 – 17, 2024 (Day Order 1 to 6)	3	3.2 Impact strength, tear strength; migration test, Barrier properties – factors affecting permeability, permeability coefficient, gas transmission rate (GTR) and its measurement, water vapour	K1-K4	5	CO1- CO4	Lecture with PPT	Quiz
Jan 18 - 23, 2025	<b>C.A. Test – I</b>						
Jan 24 -31, 2025 (Day Order 1 to 6)	3	3.2 gas transmission rate (GTR) and its measurement, water vapour transmission rate (WVTR) and its measurement	K1-K4	5	CO1- CO4	Lecture with focused discussio n	Activity or case study analysis.
		3.3 Prediction of Shelf life of foods, selection and design of packaging material for different foods					Group Activity, Presentati on
Feb 3-8, 2025 (Day Order 1 to 6)	4	Packaging of food products 4.1 Food packaging systems: Different forms of Packaging such as rigid, semi rigid, flexible forms	K1-K2	5	CO2- CO4	Lecture with video represent ation	Activity or quiz

Feb 10– 18, 2025 (Day Order 1 to 4)	4	4.2 Packaging system for dehydrated foods, frozen foods,.	K1-K3	2	CO2-CO4	Lecture with discussion	Presentati on with models
Feb 19- 26, 2025 (Day Order 1-6)	4	4.2 contd.. Packaging system for dairy products, fresh fruits and vegetables.	K1-K3	5	CO2-CO4	Lecture with discussion	Presentati on with models or Activity
Feb 27- Mar 6, 2025 (Day Order 1 to 6)	4	4.3 Packaging of Meat, Poultry and Sea Foods.	K1-K3	5	CO2-CO4	Lecture with video represent ation	Presentati on
Mar 7 – 11, 2025 (Day Order 1 to 3)	5	Packaging equipment 5.1 Packaging equipment Vacuum, CA and MA packaging equipment; gas packaging equipment	K1-K2	2	CO1-CO5	Lecture with Pictograp hs and videos	Quiz
Mar 12 –17, 2025	<b>C.A. Test – II</b>						
Mar 18 – 20, 2025 (Day 4 to 6)	5	5.2 Seal and shrink-packaging; form and fill sealing; Aseptic packaging systems; bottling; carton making	K1-K2	3	CO1-CO5	Lecture with Pictograp hs and videos	Quiz
Mar 21 - 28, 2025 (Day Order 1 to 6)	5	5.3 Recent trends in Packaging- Packaging material from plant sources-Nano particles in food packaging, edible films, biodegradable packaging.	K1-K6	5	CO1-CO5	Lecture with Pictograp hs and videos	Quiz
Mar 29- April 2, 2025 (Day Order 1 to 3)	<b>REVISION</b>						