



Shrimathi Devkunvar Nanalal Bhatt Vaishnav College For Women (Autonomous)

Owned and Managed by Cork Industries Charities Trust
Affiliated to University of Madras - Re-Accredited with 'A+' Grade by NAAC - 4th Cycle

COURSE DATASHEET

SEMESTER	I	BATCH	2026
COURSE NAME	FOOD AND NUTRITIONAL CHEMISTRY	COURSE CODE	26UCHGE1001
COURSE UNITS	V	COURSE TYPE	Generic Elective(GE)-I
CONTACT HOURS (L-T-P)	4-0-2	CREDITS	5
OFFERED BY	CHEMISTRY	SHIFT(I / II) Shift I - 8:15am- 12:50 pm Shift II - 1:00 pm -5:30pm	SHIFT-I

COURSE OBJECTIVES

1	To understand the basics of food, nutrition, vitamins, and their importance in maintaining good health.
2	To study the composition, processing, and quality of milk and dairy products, along with the chemistry of important biomolecules.
3	To develop basic knowledge and practical skills in identifying common food adulterants and ensuring food quality and safety

COURSE OUTCOMES: On completion of the course the students will be able to...

	CO Statement	Cognitive Level
CO1	To explain the types of food, bakery products, beverages, and the nutritional importance of fruits	K1 to K6
CO2	To describe the sources, functions, and deficiency diseases of vitamins and the role of essential minerals in the human body.	K1 to K6



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CO3	Explain the composition, processing, quality standards, and environmental aspects of milk and dairy products	K1 to K6
CO4	To identify the classification, structure, and uses of carbohydrates and their importance as biomolecules	K1 to K6
CO5	To detect common adulterants in food items using basic laboratory techniques	K1 to K6

SYLLABUS

UNIT	TOPICS	HOURS
1	Unit I: Food chemistry Types of food – staple food – digestion of food – stale food and its effects of stale food. Bakery products -examples of baked food – confectionary products – role of confectionary products in day to day life – beverages – types of beverages – advantages and disadvantages of beverages. Fruits–role of fruits for a healthy life–apple, mango, grapes, pomegranate, orange, banana and jackfruit.	18
2	Unit II : Vitamins Vitamins – definition and types – sources, deficiency diseases and uses of vitamin A, vitamin B1, B2 and B12, vitamin C, vitamin D, vitamin E and vitamin K. Role of Vitamins in human beings. Bioinorganic chemistry– Role of Na, K, Ca, P, Fe, Zn, Co and Mg in human system (Structure is not necessary).	18
3	Unit III : Dairy chemistry Definition of Milk as per FSSAI and average Composition of Milk. Structural Elements of Milk, difference between normal milk and colostrums. Standards of milk products – Butter, Ghee, Khoa, Paneer, Dahi and Lassi - Physicochemical changes in milk constituents during manufacture and storage of traditional dairy products. Chemical quality of water in dairy industry. Manufacture of milk powder, cheese and paneer-Environmental issues in effluent discharge from Dairy Industry.	19



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4	Unit IV : Biomolecules Carbohydrates—definition,classification,structureandusesofglucoseand fructose. Disaccharide—sucrose—inversionofcanesugar(definitiononly)—usesof sucrose. Polysaccharide—starchandcellulose—structureanduses—cellulose types— ethylcellulose, nitro cellulose,and carboxymethyl cellulose.	20
5	UnitV: Practical activities Adulterationinfoods—milk,oil,ghee,turmericpowder,chillipowder,tea, coffeepowder,green pes,pepper, jaggery,milk creamand honey. Activity -Food Composition Analysis of Commonly Consumed Products	30
Note(if any)		

TEXT/REFERENCE BOOKS/E-RESOURCES:

Text Books	Text book Reference(s) 1. J.D.Lee,<i>Concise Inorganic Chemistry</i>, 5thedn., Blackwell Science, London, 2010. 2. B.R.Puri, L.R.Sharma, K.C.Kalia, <i>Principles of Inorganic Chemistry</i>, Shoban Lal Jagin Chand and Co., New Delhi, 2005. 3. Satyaprakash, G.D. Tuli, S.K. Basu, R.D. Madan, <i>Advanced Inorganic Chemistry</i>. Vol.II 5thed., S. Chand & company, New Delhi, 2000. 4. S.C.Rastogi, <i>Biochemistry</i>, Tata McGraw Hill publisher. 2007. 5. H. Singh and V.K. Kapoor, <i>Medicinal and Pharmaceutical Chemistry</i>, Vallabh Prakashan, Delhi, 1996, 14thedn.
Books For Reference	1. Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry, John M. Beale Jr and John M. Block, Wolters Kluwer, 2011, 12thedn. 2. Swaminathan, M. (2014). <i>Essentials of food and nutrition</i> (Vols. 1 & 2). BAPPCO. 3. Fundamentals of Foods, Nutrition and Diet Therapy Mudambi, S. R., & Rajagopal, M. V. (2017). 4. <i>Fundamentals of foods, nutrition and diet therapy</i> (7thed.). New Age International Publishers. 5. Belitz, H.-D., Grosch, W., & Schieberle, P. (2009). <i>Food chemistry</i> (4th ed.).
E-Learning Resources	1. https://microbenotes.com/category/biochemistry/ 2. https://www.masterorganicchemistry.com/organic-1/ 3. https://www.organic-chemistry.org/ 4. https://www.chemistryworld.com/organic-chemistry/211.subject



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PEDAGOGY(TEACHINGMETHODOLOGY):

- Chalk &Talk
- LCD/SMART Boards
- StudentAssignments
- StudentSeminars/Webinars
- Student ModelMaking
- Quizzes
- MCQ
- Web Resources

CO-POANDCO-PSOMAPPING:										
	PO1	PO2	PO3	PO4	PO5	PO6		PSO1	PSO2	PSO3
CO1	3	2	2	2	2	-		3	2	2
CO2	2	3	3	3	3	-		3	3	3
CO3	2	2	2	2	2	-		3	3	3
CO4	3	3	3	2	2	-		3	3	3
CO5	2	3	3	2	3	-		2	3	3
Average (Useonly filled in cells for calculation)	2.4	2.6	2.6	2.2	2.4	-	2.8	2.8	2.8	

CorrelationLevel:1-Low2-Moderate3-Strong

JUSTIFICATIONOFCO-PO/PSO MAPPING			
CO	PO/PS O	Level of correla tion	Justification
CO1	PO1	3	Acquiresfundamentalknowledgeoffoodchemistryand nutrition
	PO2	2	Developsanalyticalunderstandingoffoodcategories.
	PO3	2	Appliesnutritionalconceptsforhealthypractices.



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	PO4	2	Encourages scientific learning.
	PO5	2	Foundation for nutrition research.
	PO6	-	No direct contribution.
	PSO1	3	Understands food chemistry.
	PSO2	2	Identifies food components.
	PSO3	2	Applies concepts practically.
CO2	PO1	2	Provides basic knowledge of vitamin chemistry.
	PO2	3	Strengthens understanding of vitamin structure and classification.
	PO3	3	Applies concepts in nutrition, medicine, and food fortification.
	PO4	3	Supports advanced study in nutritional biochemistry.
	PO5	3	Useful in health, wellness, and food technology sectors.
	PO6	-	No direct ethical aspect.
	PSO1	3	Builds strong vitamin chemistry knowledge.
	PSO2	3	Develops analytical skills in vitamin testing.
	PSO3	3	Supports research and industrial applications of vitamins.
CO3	PO1	2	Builds basic domain knowledge in dairy chemistry and analytical techniques
	PO2	2	Strengthens understanding of chemical preparation methods
	PO3	2	Improves ability to apply fundamental concepts in laboratory settings.
	PO4	2	Provides essential analytical skills required for higher-level dairy research.
	PO5	2	Enables application of analytical methods in industry and quality control
	PO6	-	No direct contribution to ethical and moral values.
	PSO1	3	Gives strong knowledge of chemical preparation methods used in dairy analysis.
	PSO2	3	Develops practical skills in milk and dairy testing
	PSO3	3	Enhances analytical expertise applicable in research and industry
CO4	PO1	3	Strengthens theoretical knowledge of carbohydrate chemistry.
	PO2	3	Builds understanding of monosaccharide and polysaccharide structures.
	PO3	2	Applies concepts in food and fermentation industries.
	PO4	2	Supports advanced study in carbohydrate biochemistry.
	PO5	2	Relevant in nutrition and pharmaceutical formulations.
	PO6	-	No direct ethical aspect.
	PSO1	3	Provides solid foundation in carbohydrate chemistry.
	PSO2	3	Develops skills in identification and analysis of carbohydrates.



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	PSO3	3	Supports research in food chemistry and industrial applications.
CO5	PO1	2	Food adulteration knowledge
	PO2	3	Practical detection skills.
	PO3	3	Solves food safety problems
	PO4	2	Scientific investigation
	PO5	3	Research in food safety
	PO6	-	No direct contribution
	PSO1	2	Food quality testing.
	PSO2	3	Analytical methods.
	PSO3	3	Laboratory applications.

