Discipline	CHEMISTRY				
Course Code	**UK2MDCCHE101**				
Course Title	**FOOD CHEMISTRY**				
Type of Course	**MDC**				
Semester	2				
Academic Level	100 - 199				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	3	3 hours	-	-	3
Pre-requisites	1. Basic knowledge and interest in science				
Course Summary	This course provides a comprehensive understanding of the composition of food and a brief idea of food processing and packaging.				

Detailed Syllabus:

Module	Unit	Content FOOD CHEMISTRY	45 Hrs
I	**INTRODUCTION TO FOOD AND NUTRIENTS**		**6**
	1	Functions of Food, Nutrients in Food- Energy Yielding Nutrients and Protective Nutrients (Vitamins and Minerals).	1
	2	Carbohydrates- Classification- Monosaccharides, Disaccharides, Oligosaccharides, Polysaccharides, Importance of Carbohydrates in diet**.**	2
	3	Proteins-Classification- Fibrous and Globular Proteins, Simple, Conjugate and Derived Protein, Denaturation of Protein	1
	4	Vitamins- Classification, Sources, Functions and Deficiency Diseases- Vitamin A, Vitamin B1 and B2, Vitamin C, Vitamin D, Vitamin E and Vitamin K.	2
II	**FOOD ADDITIVES AND FOOD ADULTERATION**		**15**
	5	Food Colours- Permitted and Non-Permitted, Artificial Sweeteners, Flavour Enhancers, Stabilizers and Thickening Agents, Fat Emulsifiers, Flour Treatment Agents.	2
	6	Preservatives- Natural and Artificial Food Preservatives, Antioxidants, Nutritional Supplements, Food Safety and Standards Act.	2
	7	Nutrition - Measurement of Energy Value of Food, Calorific Value, Calorific Requirements.	2
	8	Digestion and Absorption of Food-Composition and Functions of Bile, Outline Study of Digestion and Absorption- Carbohydrates, Proteins and Fats.	2
	9	Modern Food Habits- An Introduction, Health Effects of Fast Food, Junk Food, Dehydrated Food and Instant Food.	2
	10	A Comparative Study of Traditional Food Habits and Modern Food Habits. Composition and Health Effects of Soft Drinks and Beverages.	2

	11	Common Adulterants in Different Foods and Their Health Effects and Detection- Milk, Ghee, Butter, Honey, Sweets, Chilli powder, Turmeric, Tea, Sugar and Salt, black pepper, Wheat and rice.	3
III	**DAIRY PRODUCTS**		**9**
	12	Milk, Composition of Milk - Water, Protein, Lactose and Fat, Nutritive Value of Milk.	2
	13	Condensed Milk – Definition, Composition and Nutritive Value. Standardised Milk, Homogenised Milk, Flavoured Milk, Vitaminised Milk, Toned Milk.	2
	14	Butter - Composition - Theory of Churning - Desibutter - Salted Butter. Ghee - Major Constituents - Rancidity, Prevention. Cream- Definition-Composition-Chemistry of Creaming Process.	3
	15	Milk powder - Definition - Making Milk powder - Drying Process, Quality Assurance – FSSAI, PFA, AGMARK	2
IV	**FOOD PROCESSING AND PACKAGING**		**6**
	16	Food Processing - Definition, Levels and Purpose	1
	17	Traditional and Modern Methods- Heat Treatment, Fermentation, Pickling, Smoking, Drying, Curing, Freezing, Pasteurization, Ultra Heat Treatment.	3
	18	Consequences of Food Processing, Packaging Materials - Hazards, Future Prospects of Food Package.	2
V	**OPEN ENDED MODULE:**		**9**
	19	Seminar presentations, group discussions, debates, quizzes, case studies, local field visits etc on a. Nutrition analysis of popular foods b. Food label investigation for food additives c. Dairy product development d. Food safety incidents e. Challenges on food packaging f. Experimental analysis for food adulteration (Or any other similar topics suggested by the teacher)	

References

1. B. Srilakshm, "*Food science, Seventh Edition*".
2. S. Manay, "*Food: Facts and Principles*".
3. S. Sehgal, "*A Laboratory Manual of Food Analysis*".
4. H.D. Belitz, W. Grosch and P. Schieberle, "*Food Chemistry*".
5. J.M. de Man, "*Principles of Food Chemistry*".
6. S. Suzanne Nielsen, "*Food Analysis*".
7. L. H. Meyer, "*Food Chemistry*".
8. M. Sethi, E. S. Rao, "*Food Science- Experiments and Applications*".
9. N. N. Potter, J. H. Hotchkiss, "*Food Science*."

Course Outcomes

No.	Upon completion of the course the graduate will be able to	Cognitive Level	PSO addressed
CO-1	Identify the components of food.	An	PSO-2 &3
CO-2	Identify additives added to foods for various purposes.	An, E	PSO-4
CO-3	Acquire knowledge of adulteration and toxicity of food.	An	PSO-4
CO-4	Understand the various types of dairy products based on their composition.	An, C	PSO-5
CO-5	Understand the basic concepts of food processing and packaging.	An	PSO-2

R-Remember, U-Understand, Ap-Apply, An-Analyse, E-Evaluate, C-Create

Name of the Course: FOOD CHEMISTRY

Credits: 3:0:0 (Lecture:Tutorial:Practical)

CO No.	CO	PO/ PSO	Cognitive Level	Knowledge Category	Lecture (L)/ Tutorial (T)	Practical (P)
1	CO-1	PO-2 PSO-2 &3	An	C	L	
2	CO-2	PO-1 PSO-4	An, E	C, P	L	
3	CO-3	PO-3 PSO-4	An	C, P	L	
4	CO-4	PO-1 PSO-5	An, C	C	L	
5	CO-5	PO-3 PSO-2	An	C	L	

F-Factual, C- Conceptual, P-Procedural, M-Metacognitive

Mapping of COs with PSOs and POs:

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO 1	-	2	2	-	-	-	2	-	-	-	-	-	-
CO 2	-	-	-	2	-	2	-	-	-	-	-	-	-
CO 3	-	-	-	3	-	-	-	3	-	-	-	-	-
CO 4	2	-	-	-	-	-	-	-	-	2	-	-	-
CO 5	-	2	-	-	-	-	-	2	-	-	-	-	-

Correlation Levels:

Level	Correlation
-	Nil
1	Slightly / Low
2	Moderate / Medium
3	Substantial / High

Assessment Rubrics:

- Quiz / Assignment/ Quiz/ Discussion / Seminar
- Midterm Exam
- Programming Assignments
- Final Exam

Mapping of COs to Assessment Rubrics:

	Internal Exam	Assignment	Project Evaluation	End Semester Examinations
CO 1	√	√		√
CO 2	√	√		√
CO 3	√	√		√
CO 4	√	√		√
CO 5	√	√		√