

GENERIC ELECTIVE COURSE
GE FT03- Chemistry of Foods

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Theory	Tutorial	Practical/Practice		
Chemistry of Foods	4	3	0	1	XII Pass	nil

Learning Objectives

1. To understand the chemistry of foods - composition of food, role of each component
2. To understand the different macromolecules and micromolecules in food
3. To understand how food components contribute to overall quality of foods

Learning Outcomes

1. To understand the chemistry of foods - composition of food
2. To understand the role of each component, their properties and reactions in food
3. To comprehend how dietary components influence total food quality

SYLLABUS

THEORY

(Credits 3; Hours 45)

UNIT I Introduction to Chemistry of Food

1 Hour

- Introduction to Food Chemistry
- Brief composition of food (Carbohydrates, fats, proteins, vitamins, minerals and pigments)

UNIT II Chemistry of Macromolecules

20 Hours

- **Water:** Definition of water in food, Structure of water and ice, Types of water, Role of water activity in shelf life and Packaging
- **Lipids:** Introduction, classification and structure of triglycerides, types of fatty acid, deterioration of fats and oils. (Autooxidation and lipolysis)
- **Protein:** Introduction, classification and structure, types of food, protein (meat, egg, milk and wheat)
- **Carbohydrates:** Introduction, Classification, and Chemical reactions of Carbohydrates

UNIT III Chemistry of Macromolecules

7 Hours

- **Vitamins:** Introduction, types (water soluble and Fat soluble vitamins)

- **Minerals:** Introduction, Major and minor minerals, Toxic minerals in food

UNIT IV Flavors and Pigments

- Definition and basic tastes
- Description of some common food flavors
- Introduction and classification of pigments

PRACTICAL

(Credit 1; Hours 30)

- Preparation of primary and secondary solutions
- Estimation of moisture content
- Determination of gelatinization temperature range (GTR) of different starches
- Determination of effect of additives on GTR of starches
- Estimation of total Nitrogen content by Kjeldahl method
- Estimation of fat
- Estimation of Total Ash and acid insoluble ash
- Estimation of reducing sugar

Essential Readings

1. DeMan, John M. (1995). Principles of Food Chemistry. 3rd Ed., Springer.
2. Fennema, Owen R. (2008). Fennema's Food Chemistry-CRC Press (2008) - 4th Edition.

Suggested Readings

1. Potter, N.N. and Hotchkiss, J.H. (2007). Food Science 5th Ed. New York: Chapman & Hall.
2. Richard Owusu-Apenten. (2002) Introduction to Food Chemistry. CRC press
3. Hans-Dieter Belitz, Werner Grosch, Peter Schieberle. (2009) Food Chemistry. Springer link