| Course Code | Course Name | Credits |
|---|---|---|
| 26CH002 | FOOD CHEMISTRY | 04 |

**Course Objectives**

- This course on food chemistry intends to enlighten the students on the chemistry of food.
- The learning objectives of this course are to know the chemical composition and importance of balanced diet.
- To learn the food adulterants and identification of them. Principal adulterants and its effect on health.
- To know the properties of soil and the importance of plant nutrients.

**Learning Outcomes**

Upon successful completion of this course, it is intended that a student will be able to:

- Relate the structures of these food components to their chemical properties.
- Relate the structures of these food components to their physical solution properties.
- Understand their roles in the functional properties of foods.
- Understand some of the health properties of these food components.

**Unit 1 - Cereals, Pulses and Sugar (12 Hrs.)**

Cereals: definition; classification; processing; structure of cereals; composition and nutritive value; pulses: definition; classification; processing; structure of pulses; composition and nutritive value; sugar and related products; structure of sugar; properties and nutritive value; classification of sugar-related products; nutritive value.

**Unit 2 – Vegetables, Fruits and Nutrition (12 Hrs.)**

Vegetables: classification; composition and nutritive values; fruits: classification; composition and nutritive values; fungi and algae as food; enzymatic browning; non-enzymatic browning; nutritive value of common foods including milk, egg, and soybeans.

**Unit 3 - Proteins (12 Hrs.)**

Introduction to proteins; sources of proteins; classification and structure; nutritive value; physicochemical properties; nutritive and supplementary value of food proteins; denaturation and its implications; gel formation and its theories; effect of processing on food proteins; carbohydrates: definition; classification; functions; properties of simple and complex carbohydrates.

**Unit 4 – Lipids, Minerals and Vitamins (12 Hrs.)**

Lipids: nomenclature; classification; physical and chemical properties; minerals: sources, functions, bioavailability, and deficiency of calcium, iron, iodine, fluorine, sodium, and potassium; vitamins: classification; sources; functions; deficiency diseases of vitamins A, C, K, E, and $B_6$.

**Unit 5 - Food Additives (12 Hrs.)**

Definition; classification; functions; artificial sweeteners; acidulants; alkalies; edible emulsifiers; edible foaming agents; sequestrants; uses and abuses of these substances in food and beverages; food preservatives: definition; classification; food spoilage: definition and prevention; methods of preservation.

**Reference Books:**


1. R.Owen and Fennema ,Food Chemistry 1996 Marcel Decker Inc., New York.
2. Lilian Hoagland Meyer Food Chemistry, 2004 CBS Publishers & Distributors.
3. R.Mudambi. M.Sumathi, V. Raja gopal, Fundamentals of Foods and Nutrition 1983, Wiley Eastern Ltd., Madras.
4. Handbook of Food and Nutrition, M. Swaminathan, 1984 Bangalore Printing and Publishing Co. Ltd., Bangalore.
5. B. Siva Sankar,Food Processing and Preservation. Prentice 2002 Hall of India Pvt. Ltd., New Delhi.


**Websites and eLearning Sources:**

1. nptel.ac.in/courses/126105027
2. Milk 101: Nutrition Facts and Health Effects
3. https://youtu.be/i6cgi8W13Y0?si=sD96nwFpe41UwKGE

| COs and Bloom's Taxonomy Mapping – 26CH002 | | |
|---|---|---|
| **Course Outcomes** | **On completing U.G. program the students will be able to** | **BTL** |
| **CO1** | Accurately define cereals and classify them into major and minor categories, including wheat, rice, corn, barley, oats, and others; discuss the health effects and risks associated with principal food adulterants, including potential short-term and long-term consequences. | K1, K2 |
| **CO2** | Apply knowledge of food chemistry to create and evaluate balanced diet plans that meet nutritional requirements. | K3 |
| **CO3** | Analyze the nutritional value of different foods and understand their role in a balanced diet. | K4 |
| **CO4** | Identify common food adulterants and contaminants, such as artificial colors, preservatives, and substances that may compromise food quality. | K5 |
| **CO5** | Create meal plans or food products using knowledge of food composition, processing, and nutritional value. | K6 |

**BTL K1 and K2 – remembering and understanding, K3- Applying, K4 – Analyse, K5- Evaluate and K6- Create**

| Relationship Matrix – 26CH002 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Course Outcomes** | **Programme Outcomes (POs)** | | | | | | **Programme Specific Outcomes (PSOs)** | | | | | | **Mean Score of Cos** |
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** | **PSO6** | |
| **CO1** | 1 | 1 | 3 | 2 | 3 | 1 | 3 | 1 | 2 | 2 | 1 | 1 | 1.75 |
| **CO2** | 1 | 3 | 3 | 2 | 1 | 3 | 1 | 2 | 1 | 1 | 3 | 2 | 1.91 |
| **CO3** | 1 | 2 | 1 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 2.08 |
| **CO4** | 2 | 1 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 2 | 1 | 2 | 2 |
| **CO5** | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 2.25 |
| | | | | | | | | | | | | **Total** | 1.59 |

Mean Score: 3- High, 2- Medium/Moderate, 1-Low