GUJARAT TECHNOLOGICAL UNIVERSITY

BACHELOR OF ENGINEERING SYLLABUS

Subject Code : 3135101

Subject Name : Food Chemistry

WEF Academic Year :	2022-23
Semester :	3
Category of the Course :	Professional Core

Prerequisite : Nil

Rationale : Food chemistry is one of the major core components of food technology. Study of food chemistry enables to know the properties of water, carbohydrate, fats, proteins as well as food additives and its role in foods. It also helps to know the chemical changes in foods during handling, processing and storage. In addition it involves the study and development of food and its quality evaluation. This course provides the students with knowledge on the chemical constituents of food and their functional significance in food systems.

Course Scheme :

Teaching Scheme			Total Credits	Assessment Pattern and Marks				Total Marks
				Theory		Practical		
L	T	PR	C	ESE (E)	PA(M)	ESE (V)	PA (I)	
4	0	2	5	70	30	30	20	150

Course Content :

Sr. No.	Course Content	No. of Hours
1	**Water**: Role of water in foods, Structure of water and ice, Types of water, water activity and shelf life of food.	**7**
2	**Carbohydrate**: Classification of carbohydrate, properties of monosaccharide, disaccharide and complex carbohydrates, invert sugar, Application of carbohydrate in foods, modified starches.	**10**
3	**Lipids**: Classification of lipid, Role of lipid in foods, Physical and chemical properties of lipid, Qualitative changes in fats and oil.	**9**
4	**Protein**: Classification and structure, Properties of proteins, Denaturation of proteins.	**9**
5	**Food Additives**: Functions, characteristics, selection criteria, safety of food additives, Preservatives, Sweeteners, Leavening agents, Antioxidants, Bleaching agents, Improvers, Emulsifiers, Stabilizers & Thickeners, Colouring agents & pigments, Flavouring agents, Anticaking agents, Humectants.	**10**

Reference Book :

1. Food chemistry Author: L.H.Meyer (CBS Publisher, Delhi)
2. Foods : Facts and Principle Author: N.Shakuntala Manay and M. Sadaksharaswamy (New Age International Publisher)
3. Food chemistry Author: O.R. Fennema (Marcel Dekkar Inc.)
4. Food chemistry Author: H.D. Belitz and W. Groech (Springer Publication)
5. Food preservation and processing Author: M. Kalia and S. Sood (Kalyani Publisher)

Course Outcome :

After Completion of the Course, Student will able to :

No.	Course Outcomes
01	Knowledge about the moisture and water activity and understand the basic concept of shelf life of foods.
02	Study of carbohydrates to understand the properties and role of carbohydrates in foods.
03	Knowledge of structure of fatty acids, their physical and chemical properties.
04	Study of properties of food protein, structure and understand the functional role of protein in foods.
05	Knowledge of food additives and understand their role in food processing.

Suggested Course Practical List :

1. Preparation of standard solutions
2. Determination of moisture content of different food samples by air oven method
3. Determination of moisture content by infra red moisture balance
4. Determination of protein content in food samples by micro kjeldahl apparatus
5. Determination of crude fat content in different oilseeds by soxhlet apparatus
6. Determination of ash content of food sample
7. Determination of acid value of oil
8. Determination of iodine value of a given oil
9. Determination of peroxide value of a given oil sample
10. Determination of acidity and pH of fruit juice

List of Laboratory/Learning Resources Required :

Equipment :

1. Electronic balance
2. Hot air oven
3. Infrared moisture meter
4. Micro Kjeldhal unit
5. Soxhlet apparatus and heater

6. Muffle furnace
7. Water bath
8. Glass wares, plastic wares and metal wares

List of Open Source Software/learning website :

www.ift.org
www.rsc.org
www.fao.org
NPTEL

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