GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering
Subject Code: 3171408

Semester – VII
Subject Name: Food Additives

Type of course: **Professional Elective Course**

Prerequisite: Nil.

Rationale: Foods can be preserved and processed by use of food additives. Food additives offers different processing aids and desirable product attributes in food products. Moreover its safety concern is at a prime importance in consumer health.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ES (E)	PA (M)	ESE (V)	PA (I)	
3	0	2	4	70	30	30	20	150

Content:

Sr. No.	Content	Total Hrs
1.	**Introduction to Food Additives:** Definition, Classification, Intentional and Non intentional food additives, Indirect Food Additives, Difference between Additives and Adulterants, Safety evaluation of food additives, FSSAI and Codex Alimentarius Commission	**08**
2.	**Mode of action, Functions, Applications of:** Acidulates, Buffer systems, Salts and Chelating/Sequestering agents, Low calorie and Non Nutritive sweeteners	**06**
3.	Antioxidants, Emulsifying and Stabilizing agents, Anticaking agents, Thickeners, Firming agents, Flour Bleaching agents and Bread improvers	**09**
4.	**Food Preservatives:** Class I and Class II preservatives, Antimicrobial agents like KMS, Sorbic acid/Sorbates, Benzoic acid, Propionic acid/Propionates, Nisin	**07**
5.	**Food Colors and Pigments:** Natural, Nature Identical and Artificial food colors, Anthocyanin, Betalains, Annatto, Chlorophyll, Carotenoids, Caramel	**06**
6.	**Food Flavours:** Molecular structure and activity relationships of taste – Sweet, bitter, acid and salt, Chemicals causing pungency, astringency, cooling effect, Types of flavours	**06**

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
35%	40%	10%	10%	5%	

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Reference Books:

1. Handbook of Food Preservation , M. Shafiur Rehman, CRC Press, Boca Raton, 2007

2. Food Chemistry by Meyer L.M. Publisher Reinhold Publishing
3. Food Chemistry by Fenema Publisher CRC Press
4. Food Additves Databook by J. Smith and L. Hong-Shum Publisher Willey Blackwell
5. Natural Food Additves, Ingresients and Flavourings by D. Baines and R. Seal Publsiher Woodhead Publishing
6. Food Additives by A. Larry Branen et al. Publisher CRC Press

Course Outcomes:

At the end of this syllabus students will be able to :

CO	CO Statement	% Marks Weightage
1	Understanding of Food additives and their safety aspects	25
2	Understanding of mode of action and functions of food additives	20
3	Able to select a suitable food additive for a particular food product	15
4	Develop the concept of flavours, preservatives, antioxidants, stabilizers and thickeners used in food product	40

List of Practicals:

1. Estimation of salt content by Mohr's method
2. Estimation of sodium benzoate in food sample
3. Detection of natural food colour
4. Determination of chlorophyll content
5. Determination of carotenoid content
6. Effect of different levels of food preservatives in food product
7. Effect of pigments addition in food product
8. Determination of moisture content by using Karl fisher titration Method
9. Detection & estimation of synthetic food colors from food product
10. Estimation of caffeine content in coffee sample

Major Equipments

1. Spectrophotometer
2. Semi Automatic Protein Analyser
3. Semi Automatic Fat Analyser
4. Karl Fisher Assembly

List of open source software/learning websites

1. https://apps.who.int/iris/bitstream/handle/10665/42849/WHO_TRS_922.pdf;sequence=1
2. http://www.fao.org/gsfaonline/additives/index.html
3. https://www.fssai.gov.in/upload/uploadfiles/files/Compendium_Food_Additives_Regulations_08_09_2020-compressed.pdf