



Department of Biotechnology	LP: BY22008 Rev. No: 00 Date: 24.01.2024
B.E/B.Tech/M.E/M.Tech : Biotechnology Regulation:2022 PG Specialisation : Biotechnology Sub.Code/Sub.Name : BY22008/ADVANCED FOOD PROCESSING AND PACKAGING TECHNOLOGIES Unit : I	

UNIT I FOOD CHEMISTRY AND MICROBIOLOGY 9

Constituent of food – contribution to texture, flavour and organoleptic properties of food; Sources and activity of microorganisms associated with food; food borne diseases – infections and intoxications, food spoilage.

OBJECTIVE: To understand the various constituents present in food and the importance of microorganisms in food processing.

Session No *	Topics to be covered	Ref	Teaching Aids
1.	Constituent of food	TB2, Pg 3-6	LCD/BB
2.	Contribution to texture	TB2, Pg 9-38	LCD/BB
3.	Contribution to flavour	TB2, Pg 39-50	LCD/BB
4.	Organoleptic properties of food	TB1, Pg 86-87	LCD/BB
5.	Sources and activity of microorganisms associated with food	TB2, Pg 120-132	LCD/BB
6.	Food borne diseases	TB2, Pg 147-157	LCD/BB
7.	Infections	TB2, Pg 147-150	LCD/BB
8.	Intoxications	TB2, Pg 150-157	LCD/BB
9.	Food spoilage	TB2, Pg 156-165	LCD/BB
Content beyond syllabus covered (if any):-			

* Session duration: 50 minutes



Sub. Code / Sub. Name : : **BY22008/ADVANCED FOOD PROCESSING AND PACKAGING TECHNOLOGIES**

Unit : II

UNIT II THERMAL FOOD PROCESSING METHODS 9

Newer methods of thermal processing; batch and continuous; application of infra-red microwaves; ohmic heating; control of water activity; Extrusion, advances in extrusion and co-extrusion processes, advances in extruded and other ready to eat food products.

OBJECTIVE:. To familiarize the importance of thermal food processing methods in enhancing the shelf life of food.

Session No *	Topics to be covered	Ref	Teaching Aids
10.	Newer methods of thermal processing	TB2, Pg 231-244	LCD/BB
11.	Batch thermal processing	RB2, Pg 154-157	LCD/BB
12.	Continuous thermal processing	RB2, Pg 155-157	LCD/BB
13.	Application of infra-red microwaves	RB2, Pg 284-289	LCD/BB
14.	Ohmic heating	RB2, Pg 363-368	LCD/BB
15.	Control of water activity	TB1, Pg 466-474	LCD/BB
16.	Extrusion, advances in extrusion and co-extrusion processes	RB1, Pg 532-534	LCD/BB
17.	Advances in extruded food products.	RB2, Pg 135-142	LCD/BB
18.	Advances in ready-to-eat food products.	RB1, Pg 705-707	LCD/BB

Content beyond syllabus covered (if any):

* Session duration: 50 mins



Sub. Code / Sub. Name : : **BY22008/ADVANCED FOOD PROCESSING AND PACKAGING TECHNOLOGIES**
Unit : III

UNIT III A THERMAL FOOD PROCESSING METHODS 9

Super critical technology for Preservation - chemical preservatives, preservation by ionizing radiations, ultrasonics, high pressure, fermentation, curing, pickling, smoking, membrane technology, hurdle technology.

OBJECTIVE: To impart the role of non-thermal food processing methods in improving the shelf life of food

Session No *	Topics to be covered	Ref	Teaching Aids
19.	Super critical technology for Preservation		LCD/BB
20.	Chemical preservatives	RB1, Pg 491-492	LCD/BB
21.	Preservation by ionizing radiations,	RB1, Pg 765-775	LCD/BB
22.	Preservation by Ultrasonics, high pressure	RB2, Pg 559 -575	LCD/BB
23.	Preservation by Fermentation,	TB2, Pg 133-146	LCD/BB
24.	Preservation by Curing	RB1, Pg 62	LCD/BB
25.	Preservation by pickling, smoking	RB1, Pg 414-415	LCD/BB
26.	Preservation by membrane technology	RB2, Pg 281	LCD/BB
27.	Preservation by hurdle technology	RB1, Pg 656	LCD/BB

Content beyond syllabus covered (if any):

* Session duration: 50 mins



Sub. Code / Sub. Name : : **BY22008/ADVANCED FOOD PROCESSING AND PACKAGING TECHNOLOGIES**
Unit : IV

UNIT IV FOOD PRESERVATION 9

Use of high temperatures – sterilization, pasteurization, blanching, aseptic canning; frozen storage – freezing curve characteristics. Factors affecting quality of frozen foods; irradiation preservation of foods.

OBJECTIVE: To inculcate the principles and importance of preservation techniques used in food processing

Session No *	Topics to be covered	Ref	Teaching Aids
28.	Use of high temperatures	RB2, Pg 190-193	LCD/BB
29.	Sterilization	RB2, Pg 201-215	LCD/BB
30.	Pasteurization	RB1, Pg 571-582	LCD/BB
31.	Blanching	RB1, Pg 417	LCD/BB
32.	Aseptic canning	RB3 Pg. 223-275	LCD/BB
33.	Frozen storage	RB1, Pg 636-639	LCD/BB
34.	Freezing curve characteristics	RB1, Pg 338-339	LCD/BB
35.	Factors affecting quality of frozen foods	RB1, Pg 637-639	LCD/BB
36.	Irradiation preservation of foods.	RB1, Pg 751-756	LCD/BB

Content beyond syllabus covered (if any):

* Session duration: 50 mins



Sub. Code / Sub. Name : : **BY22008/ADVANCED FOOD PROCESSING AND PACKAGING TECHNOLOGIES**

Unit : V

UNIT V**FOOD PACKAGING**

9

Primary packaging media – properties and application, paper boards, metals, plastics, wood and plywood, glass, vacuum packaging, gas flush packaging, CAP & MAP, aseptic & retort packaging, box in box. Food products-General classification and packaging types, varieties and trends, Storage handling and distribution of packages-including pallets & containers.

OBJECTIVE: To understand the materials and types of packaging for different type of foods.

Session No *	Topics to be covered	Ref	Teaching Aids
37.	Primary packaging media – properties and application	RB3, Pg 125-129	LCD/BB
38.	Paper boards, metals	TB3, Pg 189-236	LCD/BB
39.	Plastics, wood and plywood	RB3, Pg 125-129	LCD/BB
40.	Glass, vacuum packaging	TB3, Pg 229-241	LCD/BB
41.	Gas flush packaging, CAP & MAP	TB3, Pg 436-437	LCD/BB
42.	Aseptic & retort packaging, box in box	RB3, Pg 125-129	LCD/BB
43.	Food products-General classification and packaging	TB3, Pg 339-425	LCD/BB
44.	Food products-types, varieties and trends	RB3, Pg 225-269	LCD/BB
45.	Storage handling and distribution of packages-including pallets & containers.	RB3, Pg 667-672	LCD/BB

Content beyond syllabus covered (if any):

* Session duration: 50 mins



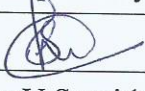
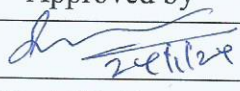
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TEXTBOOKS:

1. Coultate, T.P. Food – The chemistry of its components, 6th Ed., Royal society, 2016
2. Sivasankar, B. Food processing and preservation, Prentice Hall of India Pvt. Ltd., 2002
3. Robertson, G.L. “Food Packaging: Principles and Practice”. 2nd Edition. Taylor & Francis, 2006.

REFERENCE BOOKS:

1. Rahman, M. Shafiur. “Handbook of Food Preservation”. Marcel & Dekker, 2006.
2. Zeuthen, Peter and Bogh-Sarensen, Leif. “Food Preservation Techniques”. CRC / Wood Head Publishing, 2003.
3. Ranganna, S. “Handbook of Canning and Aseptic Packaging”. Tata McGraw-Hill, 2000

	Prepared by	Approved by
Signature		
Name	Dr. V. Sumitha	Dr. E. Nakkeeran
Designation	Professor	Professor & HOD
Date	24.01.2024	24.01.2024
Remarks *:	The Same lesson plan will be followed in the subsequent year	
Remarks *:		

* If the same lesson plan is followed in the subsequent semester/year it should be mentioned and signed by the Faculty and the HOD