



Department of Biotechnology		LP: BT18003
B.E/B.Tech/M.E/M.Tech : Biotechnology Regulation: 2018A		Rev. No: 00
PG Specialisation : NA		Date: 07.07.2023
Sub. Code / Sub. Name : BT18003 / Principles of Food Processing and Preservation		
Unit : I		

Unit Syllabus: **Food and Energy (9 h)**

Nutrient, major constituents of food – carbohydrates, proteins, lipids, vitamins, minerals, dietary sources, water, role and functional properties, contribution to organoleptic and textural characteristics.

Objective: To know about the different constituents present in the food.

Session No *	Topics to be covered	Ref	Teaching Aids
1.	Introduction to Food and Energy	T1 (1,2); T2 (1-3); R1 (1-3); R3 (3,4)	BB & PPT
2.	Importance of Nutrients in Food	T1 (1,2); T2 (4); R1 (309);	BB & PPT
3.	Major Constituents of Food: Carbohydrates	T1 (2-5, 13,14); T2 (4-8); R1(3,4)	BB & PPT
4.	Major Constituents of Food: Proteins	T1(3), R1(4-5)	BB & PPT
5.	Major Constituents of Food: Lipids	T1(6-8)	BB & PPT
6.	Major Constituents of Food: Vitamins, Minerals	T1(13-14); R3(4-10)	BB & PPT
7.	Major Constituents of Food: Dietary sources, Water	T1(33-34); R3 (25-29)	BB & PPT
8.	Role and functional properties	T1(14-26); R1 (42,43)	BB & PPT
9.	Contribution to organoleptic and textural characteristics	T1(22-25, 29, 73-74); T2(20-22); R1 (44,45); R3(27-37)	BB & PPT
Content beyond syllabus covered (if any): -			

* Session duration: 50 minutes

**Sub. Code / Sub. Name: BT18003 / Principles of Food Processing and Preservation****Unit : II****Unit Syllabus : Food Additives (9 h)**

Intentional and non-intentional additives, natural and artificial additives, functional role of additives in food processing and preservation, food colourants, food flavours, preservatives, other classification of food additives, enzymes as food processing aids.

Objective: To know about the different additives present in the food.

Session No *	Topics to be covered	Ref	Teaching Aids
10	Intentional and non-intentional additives	T1(83-88); T2(140-143)	BB & PPT
11	Natural additives	T1(38-66); T2(144-150); R1(26-28)	BB & PPT
12	Artificial additives	T1(67-72); T2(151-168) R1(29-37, 309-312)	BB & PPT
13	Functional role of additives	T1(91-93); R1(296-308)	BB & PPT
14	Food Colourants	T1(96-97); R2(2.41-2.118); R3(67-79)	BB & PPT
15	Food Flavours	T1(96-97); R2(2.41-2.118); R3(67-79)	BB & PPT
16	Food Preservatives	T1(99-100); R2(2.41-2.118); R3(67-79)	BB & PPT
17	Other classification of food additives	T1(99-100); R2(2.41-2.118); R3(67-79)	BB & PPT
18	Enzymes as food processing aids	T1(136-140); T2(200-202) R3(128-136)	BB & PPT

Content beyond syllabus covered (if any): -

* Session duration: 50 mins

**Sub. Code / Sub. Name: BT18003 / Principles of Food Processing and Preservation**Unit : **III**Unit Syllabus: **Microorganisms associated with Food (9 h)**

Sources, types, importance of bacteria, yeast and mold in food processing and preservation, fermentation, different types of fermented foods, food chemicals, single cell protein.

Objective: To gain knowledge about microorganisms in food processing and preservation.

Session No *	Topics to be covered	Ref	Teaching Aids
19	Sources of Microbes associated with Food	T1(257-260); T2(767-769); R1(318-324, 453-455)	BB & PPT
20	Types of Microbes associated with Food	T2(769-770);	BB & PPT
21	Importance of Bacteria in Food Processing & Preservation	T1(260-266); T2(771-776); R1(325-331)	BB & PPT
22	Importance of Yeast in Food Processing & Preservation	T1(267-273); T2(773-774, 779-781); R1(461-465)	BB & PPT
23	Importance of Molds in Food Processing & Preservation	T1(267-273); T2(773-774, 779-781); R1(461-465)	BB & PPT
24	Role of Fermentation in Food Processing	T1(283-316); T2(808-809)	BB & PPT
25	Different Types of Fermented Foods	T1(283-316); T2(852-853)	BB & PPT
26	Food Chemicals	T1(305-309); T2(874-877);	BB & PPT
27	Single Cell Protein	T1(321-338); T2(848-852)	BB & PPT

Content beyond syllabus covered (if any):

* Session duration: 50 mins

**Sub. Code / Sub. Name: BT18003 / Principles of Food Processing and Preservation****Unit : IV****Unit Syllabus : Food Borne Diseases and Food Spoilage (9 h)**

Food infection, food intoxication, food poisoning – bacterial, fungal, biological and chemical, food spoilage, factors responsible for spoilage - Intrinsic and extrinsic factors, spoilage of vegetable, fruit, meat, poultry, sea food, beverage, egg, dairy products, cereals, spices, and confectionery items.

Objective: To get knowledge on food borne diseases and microbes responsible for food spoilage.

Session No *	Topics to be covered	Ref	Teaching Aids
28	Food Infection, food Intoxication, food Poisoning	T1(369-374); R1(154-170)	BB & PPT
29	Bacterial, Fungal, Biological and Chemical Food Spoilage	T1(376-406) R1(191-213)	BB & PPT
30	Intrinsic Factors responsible for Food Spoilage	T1(376-406) R1(191-213)	BB & PPT
31	Spoilage of Vegetables, Fruits	T1(376-406) R1(191-213)	BB & PPT
32	Spoilage of Meat, Poultry, Eggs	R1(224-238)	BB & PPT
33	Spoilage of Sea Foods	R1(238-256)	BB & PPT
34	Spoilage of Beverages	R1(198-213)	BB & PPT
35	Spoilage of Dairy Products	T1(407-416)	BB & PPT
36	Spoilage of Cereals, Spices and Confectionery Items	T1(407-416)	BB & PPT

Content beyond syllabus covered (if any):

* Session duration: 50 mins

**Sub. Code / Sub. Name: BT18003 / Principles of Food Processing and Preservation**

Unit : V

Unit Syllabus: Food Processing and Preservation (9 h)

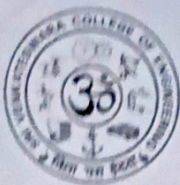
Principle involved in the use of sterilization, pasteurization and blanching, thermal death curves of microorganisms, canning; frozen storage-freezing characteristics of foods, microbial activity at low temperatures, factors affecting quality of foods in frozen storage, irradiation preservation of foods, non-thermal processing of food

Objective: To enhance the knowledge on different food processing and preservation techniques.

Session No *	Topics to be covered	Ref	Teaching Aids
37	Principles involved in Sterilization	T1(447-451)	BB & PPT
38	Principles involved in Pasteurization	T1(451-470)	BB & PPT
39	Principles involved in Blanching	T1(451-470)	BB & PPT
40	Thermal death curves of microorganisms	T1(500-503)	BB & PPT
41	Canning, Frozen Storage	T1(503-510)	BB & Animation Videos
42	Freezing characteristics of foods	T1(517-518)	BB & PPT
43	Microbial activity at low temperatures	T1(523-535); R1(614-618)	BB & PPT
44	Irradiation preservation of foods	T1(523-535); R1(614-618)	BB & Animation Videos
45	Non-thermal processing of food	T1(540-546)	BB & Animation Videos

Content beyond syllabus covered (if any):

* Session duration: 50 mins



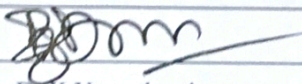
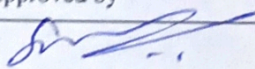
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TEXT BOOKS

1. Sivasanker B, "Food Processing and Preservation", PHI Learning Pvt. Ltd. 2002.
2. Manay N.S, and Shadaksharaswamy M, "Food - Facts and Principles", 2nd Edition, New Age International Pvt. Ltd. Publishers, 2001.
3. Desrosier N.W, and Desrosier J.N, "The Technology of Food Preservation", 4th Edition, CBS Publishers, 1998.
4. Frazier W.C, and Westhoff D.C, "Food Microbiology", 4th Edition, Mcgraw-Hill Book Co., 1988.

REFERENCES

1. Coulter T.P, "Food - The Chemistry of Its Components", 2nd Edition. Royal Society, 1992.
2. Cooper G.M, "The Cell: A Molecular Approach", 4th Edition, ASM Press, 2007.
3. Jay J.M, "Modern Food Microbiology", 6th Edition, An Asben Publications, 2000.
4. Potter N.N, and Hotchkiss J.H, "Food Science", 5th Edition, An Asben Publications, 1998.

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Remarks *: Yes		
Remarks *: Yes		

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