B.Sc. IV Year **Semester – VII**

BIM –E702
DSE- 8 FOOD BORNE DISEASES AND FOOD PRESERVATION

MM : 100
Time : 3 hrs
L Credit
4 4
Total Hours: 60

Sessional : 30
ESE : 70
Pass Marks : 40

Learning objectives:

- To understand the prevalence of bacteria in food commodities.
- To understand the occurrence of food-borne diseases.
- To know the different tests for the detection of food-borne infection.

Learning outcomes:

At the end of course student will be able to

- Explain the role of microorganisms in food commodities.
- Explain the factor responsible for the growth of bacteria.
- Perform different microbiological tests to determine the quality of food.

UNIT – I

Food spoilage: Microbes in food, factors affecting microbial growth in foods: Extrinsic and intrinsic, microbial spoilage of foods, microbial spoilage of food – milk and milk products, fruits and vegetables, meat products, canned foods.

(15 Lectures)

UNIT – II

Food preservation methods: Aseptic handling, temperature treatment, dehydration, lyophilization, osmotic pressure, radiations canning, chemical preservatives (salt and sugars, organic acids, propylene oxide, wood smoke and antibiotics), mechanism of chemical preservatives.

(09 Lectures)

UNIT - III

Food-borne diseases (Bacteria and Virus): Food poisoning (food intoxication and food infections);Bacterial food poisoning (*Clostridium, Bacillus cereus* and *Staphylococcus);* Viral infections:Rotavirus, Hepatitis A & C

(12 Lectures)

UNIT – IV

Food-borne diseases (Fungus and protozoans): Fungal food poisoning (*Aspergillus* and *Penicillium*), health hazards of mycotoxins; Protozonal infections; *Entamoeba histolytica, Tenia solium, Fasciola hepatica* **(12 Lectures)**

UNIT - V

Methods for microbiological examination of food and quality control: Indicator organisms for assuring the suitability of food products, methods of microbiological examination, direct culture technique, enumeration methods (plate count and MPN), alternative methods (dye reduction tests), electrical methods, quality criteria, sampling schemes.

(12 Lectures)

Suggested Reading

1. Doyle et al., Food Microbiology: Fundamentals and Frontier, American Society of Microbiology
2. William C Frazier, Food Microbiology, MacGraw Hills Education.
3. Adam and Moss, Food Microbiology, Royal Society of Chemistry
4. Dubey R.C. and Maheshwari, D.K. *A Textbook of Microbiology*. 3rd ed., S. Chand & Co, Ram Nagar, New Delhi, p. 1034. ISBN 81-219-2620-3
5. Mackie and McCartney. Practical Medical Microbiology. Elsevier
6. CKJ Paniker. Test Book of Microbiology, Orient Longman

DSE 8 SEMESTER VII / BIM-E752 (LAB COURSE CC-08)

The practicals based on BIM E702 will be performed.

1. Quantitative estimation of milk by standard plate count method.
2. Enzymatic test of milk by MBRT.
3. Quality testing of milk by resazurin test.
4. Determination of phosphatase activity of milk.
5. Microbiological analysis of food products.
6. Analysis of mycotoxin in fungal contaminated food materials.
7. Presumptive test of coliforms in butter.
8. Detection of bacteria in spoiled tinned food.
9. Demonstration of microbial production of curd.