

**B. Sc 2<sup>nd</sup> SEMESTER  
CORE**

**FT220C: FOOD SCIENCE & TECHNOLOGY: INTRODUCTORY FOOD MICROBIOLOGY**

**CREDITS: THEORY-4, PRACTICAL -2**

**THEORY (4 CREDITS): 60 HOURS**

**MAXIMUM MARKS: 60, MINIMUM MARKS: 24**

***Objectives/Expected Learning***

*To provide knowledge of different microorganisms associated with food and their role in spoilage and preservation of food.*

**UNIT – 1 (15 HOURS)**

**Introduction to Microbiology**

- History and scope of microbiology.
- Distribution of microorganisms.
- Microbial growth curve.
- Factors effecting microbial growth – extrinsic and intrinsic factors.

**UNIT- 2 (15 HOURS)**

**Introduction to Microbes**

- Bacteria: Structure, classification.
- Fungi: Structure and classification, harmful and beneficial fungi, mycotoxins.
- Viruses: Structure and classification.
- Economic importance of bacteria, fungi and virus.

**UNIT – 3 (15 HOURS)**

**Microbial Spoilage of Foods**

- Microbial spoilage of fresh foods-fruits, vegetables, cereals, pulses.
- Spoilage of meat and milk.
- Microbial spoilage of canned food
- Microbiological hazards associated with foods-Botulism, Salmonellosis, mycotoxins

**UNIT – 4 (15 HOURS)**

**Industrial Microbiology**

- Industrial microbiology-scope and development
- Fermented food and their benefits: sauerkraut, yoghurt, cheese, miso, tempeh
- Industrial production of enzymes and single cell protein
- Probiotics and their health benefits

**PRACTICALS (2 CREDITS: 60 HOURS)**

**MAXIMUM MARKS: 30, MINIMUM MARKS: 12**

1. Microscope: Types and working of microscope
2. Cleaning and sterilization of glassware
3. Demonstration of sterilization of equipments
4. Preparation of nutrient agar medium
5. Enumeration of microbes from food samples
6. Inoculation techniques
7. Gram staining
8. Identification of bacteria on the basis of:
  - Cultural characteristics
  - Morphological characteristics
9. Enumeration of micro-organisms-TPC
10. Demonstration and identification of permanent slides

**References**

1. Food Microbiology by Frazier
2. Modern Food Microbiology by James Jay
3. A Text Book of Microbiology by Dubey
4. Basic Food Microbiology by Banwart
5. Laboratory Manual in Microbiology by Gunasekaran