

**SEMESTER 1<sup>st</sup>**  
**MAJOR COURSE**

**FST122J: FOOD SCIENCE & TECHNOLOGY (FOOD MICROBIOLOGY AND FOOD CHEMISTRY-I)**  
**CREDITS: THEORY-4 PRACTICAL - 2**

**THEORY (4 CREDITS)**

**Objectives/Expected Learning**

- *To acquaint the students to different types of microorganisms associated with food spoilage and food preservation*
- *To acquaint the students about the structure and properties of different components of food*

**THEORY (4 CREDITS)**

**UNIT- 1 (15 HOURS)**

**Introduction to Microbiology**

- Introduction to food microbiology
- Bacteria: Structure and classification
- Fungi: Structure and classification
- Virus: Structure and classification
- Microbial growth curve and its significance
- Factors effecting microbial growth – extrinsic and intrinsic factors

**Unit-II (15 HOURS)**

**Role of Microbes in Food**

- Economic importance of bacteria, fungi and virus
- Food spoilage
- Introduction to Food borne diseases and intoxication
- Role of microbes in food industry
- Concept of probiotics

**Unit-III (15 HOURS)**

**Introduction to Food Chemistry**

- Food chemistry and its importance
- General composition of different foods
- Moisture content, water activity and their relation with shelf-life of foods.
- Basic concept of carbohydrates, proteins and fibre: chemistry, source and properties

**UNIT – IV (15 HOURS)**

**Macronutrients and enzymes**

- Lipids: Definition, sources, properties and structure
- Enzymes: Definition, classification and application in food processing
- Browning reactions in foods- Enzymatic and Non-enzymatic
- Vitamins and minerals in foods

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

1. Microscope: Types and working of microscope
2. Cleaning and sterilization of glassware
3. Identification of different food bacteria, yeast and mould on the basis of morphological characteristics
4. Enumeration of microorganisms in food sample, Total Plate count: Pour plate, Streak and Spread plate technique
5. Gram staining technique
6. Preparation and standardization of solutions
7. Determination of moisture content, ash, protein and crude fat
8. Qualitative tests of carbohydrates and proteins
9. Determination of chlorophyll content.