PROGRAM CONTENT

CHAPTER I: The Microbial World

1. History
2. Position of microorganisms in the living world
3. General characteristics of prokaryotic cells

CHAPTER II: The Bacterial Cell

1. Techniques for observing the cell
2. Cell morphology and structure

I. Essential elements

1. Cytoplasm
2. Chromosome
3. Cytoplasmic membrane
4. Cell wall

II. Additional (non-essential) elements

1. Capsule
2. Cilia and flagella
3. Pili
4. Plasmids
5. Spore

CHAPTER III: Bacterial Classification

a. Phenetic classification
b. Phylogenetic classification
c. Bergey’s classification

CHAPTER IV: Bacterial Nutrition

1. Basic requirements
2. Growth factors
3. Physical factors
4. Physicochemical parameters (temperature, pH, O_2, and water activity Aw)

CHAPTER V: Bacterial Growth

1. Measurement of growth
2. Growth parameters
3. Growth curve (batch culture)
4. Bacterial culture
5. Antimicrobial agents

CHAPTER VI: Introduction to Mycology and Virology

1. Mycology (yeasts and molds)

- Taxonomy
- Morphology
- Reproduction

2. Virology

- Morphology (capsid and envelope)
- Different types of viruses

CHAPTER VII: Roles of Microorganisms

1. Microorganisms and the environment
2. Microorganisms and health
3. Microorganisms and industry
4. Microorganisms and agriculture