

Session 1 – Microbiology in Perspective

Text:	Chapters 1 and 2
Anticipated time:	2 class periods
Review Questions:	Chap 1: 1, 4, 5, 6, 7. Chap 2: 3, 6, 7, 10.
Thinking Questions:	Chap 2: 1, 2.
Basic Objectives:	You should be able to discuss the contributions of the listed scientists, and the historical development of the discipline of microbiology. Do not hesitate to relate to other historical developments as well. You should be able to discuss the basic principles of microscopy, the diversity of types of microscopes used by microbiologists, and how specimens are prepared for viewing.

Chapter 1 – The History and Scope of Microbiology

Introduction *Review.* Define: Microbiology. *Review* Tab 1.1 for perspective.

1.1 The Discovery of Microorganisms

Review. What was Leeuwenhoek's contribution to microbiology?

1.2 The Conflict Over Spontaneous Generation

Review. What was Pasteur's contribution to the debate?

1.3 The Role of Microorganisms in Disease

Review. What contributed to Lister's interests in antisepsis?
What was the contribution of Koch to the development of medical microbiology? Understand the significance of Koch's postulates. *Read* Box 1.2 and correlate to the original postulates.

1.4 Industrial Microbiology and Microbial Ecology

Review. Note the contributions of Pasteur, Winogradsky and Beijerinck to the development of environmental microbiology.

1.5 Members of the Microbial World

Review. Note the phylogenetic position of organisms typically studied by microbiologists.

1.6 The Scope and Relevance of Microbiology

Review. Note the interface between microbiology and modern molecular biology.

1.7 The Future of Microbiology

Read carefully. Is microbiology important?

Chapter 2 – The Study of Microbial Structure

Introduction *Review.*

2.1 Lenses and the Bending of Light

Read, including Figs 2.1 and 2.2. Define: Refraction and focal point.

2.2 The Light Microscope

Introduction *Review.*

Bright-Field *Read.* What is the function of the condenser?

Resolution *Read.* Define: Resolution and Magnification. What determines these characteristics? How does oil (Fig 2.6) increase resolution?

Dark-Field *Read.* Differentiate: Bright-field from dark-field condenser. See Fig 2.7b.

Phase-Contrast *Read.* Don't worry about the optical physics. What is the utility of this microscope? *Review* Fig 2.8.

Differential *Review.*

Fluorescence *Read.* Is this just dark-field microscopy? *Review* Figs 2.12 and 2.13.

2.3 Preparation and Staining of Specimens

