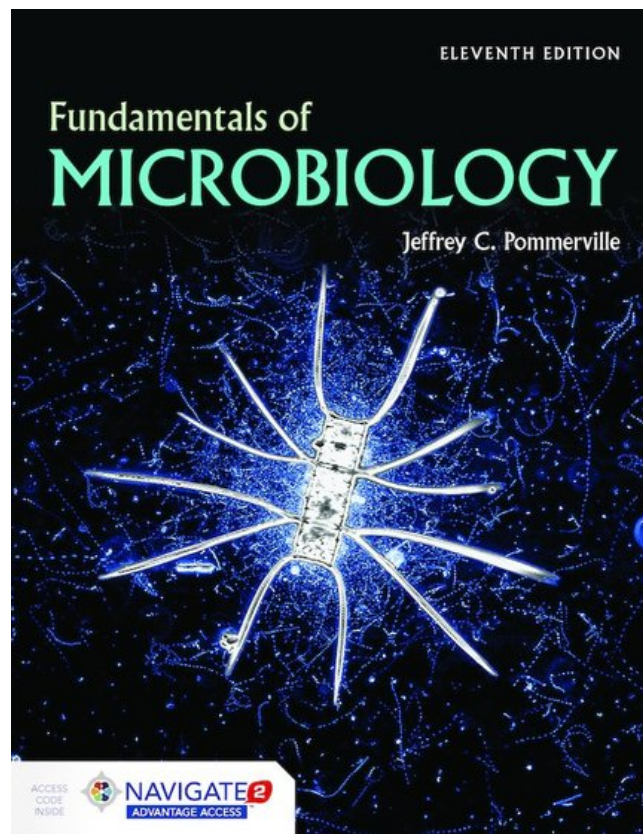




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Fundamentals of Microbiology, Eleventh Edition

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Jeffrey C. Pommerville, PhD, Glendale Community College

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This Transition Guide outlines many of the changes and new content in the *Eleventh Edition*. Use this guide for an easy transition to the new edition.

Of Course.

Pommerville's *Fundamentals of Microbiology* has done it again, as the easy choice for introductory microbiology was just made easier. Now with a new modern and intuitive design, a deeper focus on career application, and exciting new features, the Eleventh Edition has raised the bar for introductory microbiology textbooks.

Fundamentals of Microbiology is a true learning solution. Jeff Pommerville invites you to discover microbiology as no other author can, with his relatable examples and smooth writing style. Features such as *Investigating the Microbial World*, *MicroInquiry*, and *Chapter Challenges* are student-friendly resources designed to teach concepts and encourage practical application. Instructors will be pleased to find the organizational framework of the text reflects the Curriculum Guidelines for Undergraduate Microbiology as recommended by the American Society for Microbiology and also addresses the AAAS "Vision and Change" recommendations.

Key Features to the Eleventh Edition

- All the core principles of microbiology are here, including cell structure and function, metabolic pathways, information flow and genetics, microbial systems, and impact of microorganisms.
- **NEW** stunning **interior design** with over 575 NEW and revised illustrations that unlock complex topics and biological processes
- **NEW clinical case studies** throughout for application to nursing and health sciences
- Includes the latest on Zika and Ebola viruses
- NEW information on the human microbiome
- Over 100 minutes of **NEW Laboratory videos available*** (*See below for package details)

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CHAPTER OUTLINE

Table of Contents comparison to transition from the *Tenth* to the *Eleventh Edition*

| 10th Edition | 11th Edition |
|---|---|
| Part 1: Foundations of Microbiology | Part 1: Foundations of Microbiology |
| Chapter 1: Microbiology: Then and Now | Chapter 1: Microbiology: Then and Now |
| Chapter 2: The Chemical Building Blocks of Life | Chapter 2: The Chemical Building Blocks of Life |
| Chapter 3: Concepts and Tools for Studying Microorganisms | Chapter 3: Concepts and Tools for Studying Microorganisms |
| Chapter 4: Structure of Bacterial and Archaeal Cells | Chapter 4: Structure and Organization of Prokaryotic Cells |
| Chapter 5: Microbial Growth and Nutrition | Chapter 5: Microbial Growth and Nutrition |
| Chapter 6: Metabolism of Microorganisms | Chapter 6: Microbial Metabolism |
| Chapter 7: Control of Microorganisms: Physical and Chemical Methods | Part 2: The Genetics of Microorganisms |
| Part 2: The Genetics of Microorganisms | Chapter 7: Microbial Genetics |
| Chapter 8: Microbial Genetics | Chapter 8: Gene Transfer, Genetic Engineering, and Genomics |
| Chapter 9: Gene Transfer, Genetic Engineering, and Genomics | Part 3: The Control of Microorganisms |
| Part 3: Bacterial Diseases of Humans | Chapter 9: Control of Microorganisms: Physical and Chemical Methods |
| Chapter 10: Airborne Bacterial Diseases | Chapter 10: Antimicrobial Drugs and Superbugs |
| Chapter 11: Foodborne and Waterborne Bacterial Diseases | Part 4: Bacterial Diseases of Humans |
| Chapter 12: Soilborne and Arthropodborne Bacterial Diseases | Chapter 11: Airborne Bacterial Diseases |
| Chapter 13: Sexually Transmitted and Contact Transmitted Bacterial Diseases | Chapter 12: Foodborne and Waterborne Bacterial Diseases |
| Part 4: Viruses and Eukaryotic Microorganisms | Chapter 13: Soilborne and Arthropodborne Bacterial Diseases |
| Chapter 14: The Viruses and Virus-Like Agents | Chapter 14: Sexually Transmitted and Contact Transmitted Bacterial Diseases |
| Chapter 15: Viral Infections of the Respiratory Tract and Skin | Part 5: Viruses and Eukaryotic Microorganisms |
| Chapter 16: Viral Infections of the Blood, Lymphatic, Gastrointestinal, and Nervous Systems | Chapter 15: The Viruses and Virus-like Agents |
| Chapter 17: Eukaryotic Microorganisms: The Fungi | Chapter 16: Viral Infection of the Respiratory Tract and Skin |

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| | |
|---|--|
| Chapter 18: Eukaryotic Microorganisms: The Parasites | Chapter 17: Viral Infections of the Blood, Lymphatic, Gastrointestinal, and Nervous Systems |
| Part 5: Interactions and Impact of Microorganisms with Humans | Chapter 18: Eukaryotic Microorganisms: The Fungi |
| Chapter 19: Infection and Disease | Chapter 19: Eukaryotic Microorganisms: The Parasites |
| Chapter 20: Resistance and the Immune System: Innate Immunity | Part 6: Interactions and Impact of Microorganisms with Humans |
| Chapter 21: Resistance and the Immune System: Acquired Immunity | Chapter 20: The Host-Microbe Relationship and Epidemiology |
| Chapter 22: Immunity and Serology | Chapter 21: Resistance and the Immune System: Innate Immunity |
| Chapter 23: Immune Disorders and AIDS | Chapter 22: Resistance and the Immune System: Adaptive Immunity |
| Chapter 24: Antimicrobial Drugs | Chapter 23: Immunity and Serology |
| Part 6: Environmental and Applied Microbiology* | Chapter 24: Immune Disorders and AIDS |
| Chapter 25: Microbiology of Foods* | Part 7: Environmental and Applied Microbiology* |
| Chapter 26: Environmental Microbiology* | Chapter 25: Applied and Industrial Microbiology of Foods* |
| Chapter 27: Industrial Microbiology and Biotechnology* | Chapter 26: Environmental Microbiology* |
| Appendix A: Metric Measurement | Appendix A: Metric Measurement and Temperature Conversion Chart |
| Appendix B: Temperature Conversion Chart | Appendix B: CDC Summary of Notifiable Diseases in the United States |
| Appendix C: Answers to Concept and Reasoning , end-of-chapter, and figure questions.* | Appendix C: Pronouncing Organism Names |
| Appendix D: Answers to Chapter Challenge, Investigating the Microbial World, Microbial Inquiry, and Textbook Case questions.* | Appendix D: Answers to Self-Test* |
| | Appendix E: Answers to MicroInquiry, Clinical Case, and Investigating the Microbial World Questions* |
| | Appendix F: Answers to Chapter Challenge Questions* |

*Available online only

IMPORTANT CHAPTER UPDATES

In addition to the key updates made to all chapters, the author has provided more detailed notes on significant changes in certain chapters.

Chapter 1 Microbiology: Then and Now

- ✓ New Clinical Case Study
- ✓ Modified MicroInquiry feature
- ✓ 2 new and 1 revised and updated MicroFocus feature
- ✓ Chapter Self-Test redesigned

Chapter 2 The Chemical Building Blocks of Life

- ✓ 16 figures modified for clarity
- ✓ 2 new figures
- ✓ Chapter Self-Test redesigned

Chapter 3 Concepts and Tools for Studying Microorganisms

- ✓ New discussion of cell size importance
- ✓ New MicroFocus box on very small cells
- ✓ More basic information on eukaryotic organelles
- ✓ New text material on endosymbiosis
- ✓ New MicroInquiry feature on microbial identification
- ✓ Chapter Self-Test redesigned

Chapter 4 Cell Structure and Function in the Bacteria and Archaea

- ✓ New MicroInquiry feature on biofilms
- ✓ New information on bacterial cell compartments
- ✓ Chapter Self-Test redesigned

Chapter 5 Microbial Growth and Nutrition

- ✓ New information on biofilm growth
- ✓ New and revised MicroFocus features
- ✓ New section on chemical factors influencing microbial growth
- ✓ Chapter Self-Test redesigned

Chapter 6 Metabolism of Microorganisms

- ✓ Revised MicroInquiry feature
- ✓ New clinical case
- ✓ Revised section on cellular respiration
- ✓ Revised section on metabolic diversity
- ✓ Chapter Self-Test redesigned

Chapter 7 Microbial Genetics

- ✓ New information on bacterial genomes
- ✓ New information on organelle DNA
- ✓ Revised section on mutations
- ✓ Chapter Self-Test redesigned

Chapter 8 Gene Transfer, Genetic Engineering, and Genomics

- ✓ New clinical case study
- ✓ Added discussion on bioethics in biotechnology
- ✓ Several new figures
- ✓ Chapter Self-Test redesigned

Chapter 9 Control of Microorganisms: Physical and Chemical Methods

- ✓ New Investigating the Microbial World
- ✓ Chapter Self-Test redesigned

Chapter 10 Antimicrobial Drugs

Formerly Chapter 24

- ✓ New Investigating the Microbial World box on antibiotic resistance
- ✓ Chapter Self-Test redesigned

Chapter 11 Airborne Bacterial Diseases

- ✓ Expanded discussion of the human respiratory microbiome
- ✓ Revised material on pertussis and tuberculosis
- ✓ Revised tables
- ✓ Chapter Self-Test redesigned

Chapter 12 Foodborne and Waterborne Bacterial Diseases

- ✓ New MicroFocus feature on probiotics
- ✓ Expanded discussion of the human gut microbiome
- ✓ New figures on oral health
- ✓ Revised tables
- ✓ Chapter Self-Test redesigned

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Chapter 13 Soilborne and Arthropodborne Bacterial Diseases

- ✓ New MicroFocus feature on insect bites
- ✓ Updated discussion of Lyme disease
- ✓ New figures on arthropodborne diseases
- ✓ Chapter Self-Test redesigned

Chapter 14 Sexually Transmitted and Contact Transmitted Bacterial Diseases

- ✓ New MicroFocus Box about rosacea
- ✓ New information on the human microbiome
- ✓ New figures and art
- ✓ Chapter Self-Test redesigned

Chapter 15 The Viruses and Virus-Like Agents

- ✓ New information on giant viruses
- ✓ New figures and art
- ✓ Chapter Self-Test redesigned

Chapter 16 Viral Infections of the Respiratory Tract and Skin

- ✓ New figures on virus families
- ✓ New Investigating the Microbial World
- ✓ New figure on recent mumps outbreaks
- ✓ Chapter Self-Test redesigned

Chapter 17 Viral Infections of the Blood, Lymphatic, Gastrointestinal, and Nervous Systems

- ✓ New introduction on Zika virus infection
- ✓ New MicroInquiry feature
- ✓ Coverage of Zika virus infection
- ✓ Updated material on Ebola virus disease
- ✓ Updated material on yellow fever & dengue fever
- ✓ Chapter Self-Test redesigned

Chapter 18 Eukaryotic Microorganisms: The Fungi

- ✓ New material on the fungal microbiome
- ✓ New figures
- ✓ Chapter Self-Test redesigned

Chapter 19 Eukaryotic Microorganisms: The Parasites

- ✓ New Clinical Case
- ✓ Chapter Self-Test redesigned

Chapter 20 The Host-Microbe Relationship and Epidemiology

- ✓ New tables
- ✓ Several figures redesigned
- ✓ Narrative reorganized
- ✓ Chapter Self-Test redesigned

Chapter 21 Resistance and the Immune System: Innate Immunity

- ✓ New tables
- ✓ New figure for inflammation
- ✓ Chapter Self-Test redesigned

Chapter 22 Resistance and the Immune System: Acquired Immunity

- ✓ Revised figures
- ✓ Chapter Self-Test redesigned

Chapter 23 Immunity and Serology

- ✓ 2 MicroFocus features revised
- ✓ Chapter Self-Test redesigned

Chapter 24 Immune Disorders and AIDS

- ✓ Update on AIDS
- ✓ New figures
- ✓ Chapter Self-Test redesigned

Chapter 25 Applied and Industrial Microbiology

- ✓ Chapter material organized around food spoilage, food preservation, and industrial uses of microbes in food production (fermentation)
- ✓ Chapter Self-Test redesigned

Chapter 26 Environmental Microbiology

Chapter completely revised to incorporate material from previous Chapter 27

- ✓ New chapter opener
- ✓ Material organized around water pollution, water & sewage treatment, and microbial roles in biogeochemical recycling in the environment

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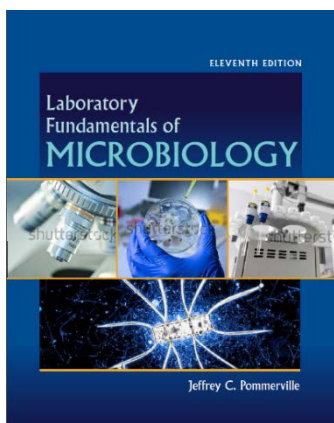
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Laboratory Fundamentals of Microbiology, Eleventh Edition Including Fundamentals of Microbiology Laboratory Videos



Jeffrey C. Pommerville, PhD, Glendale Community College
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Laboratory Videos

Section: Lab Safety

(Video: Laboratory safety – run time 1:57)

(Video: Cleaning up a culture spill – run time 1:29)

Section: Laboratory Techniques and Skills

(Video: How to use a gas burner / bacti-cinerator to sterilize an inoculating loop / needle – run time 2:07)

(Video: Broth-to-broth – run time 2:47)

(Video: Broth-to-agar – run time 3:47)

(Video: Four-way streak plate – 4:25)

(Video: Preparing the pour plate – 7:02)

(Video: Transferring a solution with a pipette – 2:55)

(Video: How to make a serial dilution – 4:01)

Section: Microscopy

(Video: How to use the light microscope: Identifying the parts – 5:02)

(Video: Measuring cell size – 1:30)

Section: Bacterial Staining Techniques

(Video: How to make a bacterial smear – 4:05)

(Video: How to make a simple stain technique – 2:07)

(Video: How to make a negative stain preparation – 2:47)

(Video: Preparing a Gram stain – 4:19)

(Video: Preparing an endospore stain – 3:30)

(Video: How to make a capsule stain preparation – 2:30)

(Video: How to make a hanging drop preparation – 4:15)

Section: Control of Microorganisms

(Video: How to Prepare a Disk Diffusion Assay – 4:56)

(Video: How to prepare the Kirby-Bauer test – 4:30)

Section: Measuring Population Growth

(Video: How to Use a Petroff-Hausser Chamber – 2:38)

(Video: How to Prepare a Standard Plate Count – 7:26)

(Video: How to use a spectrophotometer – 3:18)

Section: Medical Microbiology

(Video: Preparing the acid-fast stain – 3:33)

(Video: Oxidase test – 1:52)

(Video: IMViC: Indole test – 2:16)

(Video: IMViC: Methyl red test – 2:22)

(Video: IMViC: Voges-Proskauer test – 3:21)

(Video: IMViC: Citrate test)

Section: Identification of a Bacterial Unknown

(Video: Biochemical tests: Carbohydrate fermentation – 3:04)

(Video: Starch hydrolysis test – 2:00)

(Video: Catalase test – 2:00)

(Video: Hydrogen sulfate – 1:53)

(Video: Urease test – 2:22)