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***Fundamentals of Microbiology: Body Systems Edition, 3rd Edition***

*Includes Navigate 2 Advantage Access*



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**SEE WHAT’S NEW TO THE THIRD EDITION!**

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

Ideal for health science and nursing students, ***Fundamentals of Microbiology: Body Systems Edition, Third Edition*** retains the engaging, student-friendly style and active learning approach for which award-winning author and educator Jeffrey Pommerville is known. Highly suitable for non-science majors, the fully revised and updated third edition of this bestselling text contains new pedagogical elements and an established learning design format that improves comprehension and retention and makes learning more enjoyable. Unlike other texts in the field, ***Fundamentals of Microbiology: Body Systems Edition*** takes a global perspective on microbiology and infectious disease, and supports students in self-evaluation and concept absorption. Furthermore, it includes real-life examples to help students understand the significance of a concept and its application in today’s world, whether to their local community or beyond.

**KEY UPDATES:**

* All chapters have been carefully and thoroughly revised and updated with the latest scientific and education research
* Improved visual aspects of the text to make the understanding of difficult concepts more approachable and the figures more engaging
* Information pertinent to nursing and allied health has been added
* NEW and revised *Clinical Cases* (formerly *Textbook Cases*) present contemporary human disease scenarios
* NEW *Chapter Challenges* provide stimulating activities to help students develop critical thinking skills
* NEW *Investigating the Microbial World* boxes present actual (abridged) experiments that require students to apply the process of science and use quantitative reasoning
* NEW and revised *MicroInquiry* boxes allow students to interactively investigate a vital concept in the chapter
* NEW *Key Concept* organization presents section statements identifying the important concepts in the upcoming section and alerts you to the significance of that written material
* NEW *Chapter Self-Tests* outlines important concepts in four steps: Review of Facts and Terms, Concept Review, Applications and Problems, and Questions for Thought and Discussion

**CHAPTER OUTLINE**

Table of Contents Comparison to transition from the *Second* to the *Third Edition*

|  |  |
| --- | --- |
| **Second Edition** | **Third 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: Cell Structure and Function in the Bacteria and Archaea | Chapter 4: Cell Structure and Function in the Bacteria and Archaea |
| Chapter 5: Microbial Growth and Nutrition | Chapter 5: Microbial Growth and Nutrition |
| Chapter 6: Metabolism of Microorganisms | Chapter 6: Metabolism of Microorganisms |
| 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: A Survey of the Microbial World** | Chapter 9: Control of Microorganisms: Physical and Chemical Methods |
| Chapter 10: Microbial Systematics and the Domains Bacteria and Archaea | Chapter 10: Antimicrobial Drugs |
| Chapter 11: Eukaryotic Microorganisms: The Protists, Fungi, and Helminths | **Part 4: A Survey of the Microbial Word** |
| Chapter 12: The Viruses and the Virus-Like Agents | Chapter 11: Microbial Systematics and the Domains Bacteria and Archaea |
| **Part 4: Interactions and Impact of Microorganisms with Humans** | Chapter 12: Eukaryotic Microorganisms: The Protists, Fungi, and Helminths |
| Chapter 13: Infection and Disease | Chapter 13: The Viruses and Virus-Like Agents |
| Chapter 14: Resistance and the Immune System: Innate Immunity | **Part 5: Interactions and Impact of Microorganisms with Humans** |
| Chapter 15: Resistance and the Immune System: Acquired Immunity | Chapter 14: Infection and Disease |
| Chapter 16: Immunity and Serology | Chapter 15: Resistance and the Immune System: Innate Immunity |
| Chapter 17: Immune Disorders and AIDS | Chapter 16: Resistance and the Immune System: Acquired Immunity |
| Chapter 18: Antimicrobial Drugs | Chapter 17: Immunity and Serology |
| **Part 5 Infectious Diseases of Humans** | Chapter 18: Immune Disorders and AIDS |
| Chapter 19: Infectious Diseases Affecting the Skin and Eyes | **Part 6: Infectious Diseases and AIDS** |
| Chapter 20: Infectious Diseases Affecting the Respiratory System | Chapter 19: Infectious Diseases Affecting the Skin and Eyes |
| Chapter 21: Infectious Diseases Affecting the Digestive System | Chapter 20: Infectious Diseases Affecting the Respiratory System |
| Chapter 22: Infectious Diseases Affecting the Nervous System | Chapter 21: Infectious Diseases Affecting the Digestive System |
| Chapter 23: Cardiovascular, Lymphatic, and Systemic Infectious Diseases | Chapter 22: Infectious Diseases Affecting the Nervous System |
| Chapter 24: Infectious Diseases Affecting the Urinary and Reproductive Systems | Chapter 23: Cardiovascular, Lymphatic, and Systemic Infectious Diseases |
| **Part 6: Environmental and Applied Microbiology** | Chapter 24: Infectious Diseases Affecting the Urinary and Reproductive Systems |
| Chapter 25: Microbiology of Food (Available online only) | **Part 7: Environmental and Applied Microbiology** |
| Chapter 26: Environmental Microbiology (Available online only) | Chapter 25: Applied and Industrial Microbiology (Available online only) |
| Chapter 27: Industrial Microbiology and Biotechnology (Available online only) | Chapter 26: Environmental Microbiology (Available online only) |

**IMPORTANT CHAPTER UPDATES:**

**Chapter 1 Microbiology: Then and Now**

* New introduction highlighting the microbial world
* Revised material on model systems
* Chapter Self-Test redesigned
* New “Chapter Challenge” with three follow up challenges
* New “Investigating the Microbial World”
* Two new and one revised and updated MicroFocus feature
* One new photo, one new figure
* One figure revised for clarity

**Chapter 2 The Chemical Building Blocks of Life**

* Chapter Self-Test redesigned
* New “Chapter Challenge” with four follow up challenges
* New “Investigating the Microbial World”
* One new photo
* One figure revised for clarity

**Chapter 3 Concepts and Tools for Studying Microorganisms**

* Rewritten section of classification
* Revise section on microbial identification
* Improved visual presentation of microscopy
* Chapter Self-Test redesigned
* New “Chapter Challenge” with four follow up challenges
* One MicroFocus feature revised and updated
* Four new photos
* One figure revised for clarity

**Chapter 4 Cell Structure and Function in the Bacteria and Archaea**

* Chapter Self-Test redesigned
* New “Chapter Challenge” with three follow up challenges
* New “Investigating the Microbial World”
* Two new MicroFocus features

**Chapter 5 Microbial Growth and Nutrition**

* Chapter Self-Test redesigned
* New “Chapter Challenge” with three follow up challenges
* New “Investigating the Microbial World”
* One new and two revised MicroFocus features
* One new photo
* Four figures revised for clarity

**Chapter 6 Metabolism of Microorganisms**

* Revised sections on cellular respiration and alternative energy sources
* Chapter Self-Test redesigned
* New “Chapter Challenge” with four follow up challenges
* New “Investigating the Microbial World”

**Chapter 7 Microbial Genetics**

* Revised section of DNA replication
* Chapter Self-Test redesigned
* New “Chapter Challenge” with four follow up challenges
* New “Investigating the Microbial World”
* New “Clinical Case”
* Two MicroFocus features revised
* Five figures revised for clarity

**Chapter 8 Gene Transfer, Genetic Engineering, and Genomics**

* Revised section on conjugation
* More concise coverage of genetic engineering and its uses
* Revise section on comparative genomics with more information on microbial forensics
* Chapter Self-Test redesigned
* New “Chapter Challenge” with three follow up challenges
* New “Investigating the Microbial World”
* Six figures revised for clarity and two updated
* One new table

**Chapter 9 Control of Microorganisms: Physical and Chemical Methods**

* Chapter Self-Test redesigned
* New “Chapter Challenge” with three follow up challenges
* New “Investigating the Microbial World”
* One new figure and two figures revised for clarity

**Chapter 10 Antimicrobial Drugs**

*Formerly Chapter 24*

* Completely revise and updated material on antibiotics, including the CRE and NDM superbugs
* Chapter Self-Test redesigned
* New “Chapter Challenge” with five follow up challenges
* New “Investigating the Microbial World”
* One new and two revised MicroFocus features
* Two new photos, three new figures
* Seven figures revised for clarity and four tables revised

**Chapter 11 Microbial Systematics and the Domains Bacteria and Archaea**

* Material on microbial systematics shortened
* Improved coverage of mutations and horizontal gene transfer
* Chapter Self-Test redesigned
* New “Chapter Challenge” with three follow up challenges
* New “Investigating the Microbial World”
* One new MicroFocus feature
* One new figure and two figures revised for clarity

**Chapter 12 Eukaryotic Microorganisms: The Protists, Fungi, and Helminths**

* Revised material on the classification of the protists
* Condensed coverage of fungal classification
* Chapter Self-Test redesigned
* New “Chapter Challenge” with four follow up challenges
* New “Investigating the Microbial World”
* One new photo
* Five figures revised for clarity and one table revised

**Chapter 13 The Viruses and Virus-Like Agents**

* Improved coverage of the history of virology
* Amended coverage of virus replication
* Updated coverage of viruses and cancer
* Chapter Self-Test redesigned
* New “Chapter Challenge” with five follow up challenges
* New “Investigating the Microbial World”
* Four MicroFocus features revised
* One new figure and seven figures revised for clarity

**Chapter 14 Infection and Disease**

* Reorganized sections on the stages and progression of infectious disease
* Updated and revised information on epidemiology
* Chapter Self-Test redesigned
* New “Chapter Challenge” with three follow up challenges
* New “Investigating the Microbial World”
* One new and two revised and updated MicroFocus features
* Seven figures revised for clarity and two updated
* Two new tables

**Chapter 15 Resistance and the Immune System: Innate Immunity**

* Material on the white bloods cells restructured
* Complement coverage simplified
* Chapter Self-Test redesigned
* New “Chapter Challenge” with four follow up challenges
* New “Investigating the Microbial World”
* One MicroFocus feature revised
* One new figure and three figures revised for clarity

**Chapter 16 Resistance and the Immune System: Acquired Immunity**

* Improved coverage of cell-mediated immunity
* Chapter Self-Test redesigned
* New “Chapter Challenge” with three follow up challenges
* New “Investigating the Microbial World”
* Six figures revised

**Chapter 17 Immunity and Serology**

* Chapter Self-Test redesigned
* New “Chapter Challenge” with three follow up challenges
* New “Investigating the Microbial World”
* Two MicroFocus features revised
* One new photo
* Five figures revised and two updated
* One table updated

**Chapter 18 Immune Disorders and AIDS**

* Improved coverage of hypersensitivities
* Update coverage of AIDS
* Chapter Self-Test redesigned
* New “Chapter Challenge” with three follow up challenges
* New “Investigating the Microbial World”
* One new MicroFocus feature
* MicroInquiry revised
* One new figure and five figures revised for clarity

**Chapter 19 Infectious Diseases Affecting the Skin and Eyes**

* Enhanced coverage of the skin microbiome
* More concise coverage of skin diseases caused by bacteria, viruses, fungi, and parasites
* Chapter Self-Test redesigned
* New “Chapter Challenge” with three follow up challenges
* New “Investigating the Microbial World”
* One MicroFocus feature revised
* Seven new photos
* One figure revised for clarity and five tables revised

**Chapter 20 Infectious Diseases Affecting the Respiratory System**

* Updated information on respiratory microbiome
* New discussion of pertussis outbreaks
* Updated information of flu virus types and transmission
* Update information of MERS
* Chapter Self-Test redesigned
* New “Chapter Challenge” with five follow up challenges
* New “Investigating the Microbial World”
* Two new and three revised and updated MicroFocus features
* MicroInquiry revised and updated
* Two new photos and three new figures
* Five figures revised and two tables revised and updated

**Chapter 21 Infectious Diseases Affecting the Digestive System**

* Updated information and more discussion on the gut microbiome
* More coverage of *Clostridium difficile* and norovirus infections
* Better coverage of intestinal helminths
* Chapter Self-Test redesigned
* New “Chapter Challenge” with eight follow up challenges
* New “Investigating the Microbial World”
* Two new and one revised MicroFocus feature
* Two new photos, three new figures
* Four figures revised and three tables revised

**Chapter 22 Infectious Diseases Affecting the Nervous System**

* Update coverage of meningitis and recent outbreaks
* Chapter Self-Test redesigned
* New “Chapter Challenge” with four follow up challenges
* New “Investigating the Microbial World”
* New “Clinical Case”
* One new and one revised MicroFocus feature
* Two new figures
* Four figures revised and two tables revised

**Chapter 23 Cardiovascular, Lymphatic, and Systemic Infectious Diseases**

* Update coverage of emerging hemorrhagic fevers
* Chapter Self-Test redesigned
* New “Chapter Challenge” with five follow up challenges
* New “Investigating the Microbial World”
* One MicroFocus feature revised and updated
* One new photo
* Two figures revised and three tables revised

**Chapter 24 Infectious Diseases Affecting the Urinary and Reproductive Systems**

* Revised organization of material on urinary tract infections
* Updated material on STDs
* Chapter Self-Test redesigned
* New “Chapter Challenge” with four follow up challenges
* New “Investigating the Microbial World”
* Three MicroFocus features revised and updated
* Three figures revised and three tables revised

**Chapter 25 Allied and Industrial Microbiology**

* Chapter material organized around food spoilage, food preservation. And industrial uses of microbes in food production (fermentation)
* Chapter Self-Test redesigned
* New “Chapter Challenge” with four follow up challenges
* New “Investigating the Microbial World”
* One new MicroFocus feature and one MicroFocus feature revised and updated
* Seven new photos, three new figures, and two new tables

**Chapter 26 Environmental Microbiology**

*Chapter completely revised to incorporate some material from old Chapter 27*

* Chapter material organized around water pollution, water and sewage treatment, and microbial roles in biogeochemical recycling in the environment.
* Chapter Self-Test redesigned
* New “Chapter Challenge” with three follow up challenges
* New “Investigating the Microbial World”

**SUPPORT FOR INSTRUCTORS**

* Lecture Outlines in PowerPoint format
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