

Review of microbiology: A systems approach

Microbiology

A Systems approach is a required textbook for my class, Elementary Microbiology (BIOS 2010). I have been teaching this class for the last ten years. This class is offered to nursing students and health science majors at Ohio University Zanesville. The book is very organized and it contains a nice introduction to many areas to be covered in the book. The book is easy to navigate with the table of contents, index and glossary. The text has review questions at end of each chapter for extra practice with answers provided in the appendix. Each chapter is outlined with expected learning outcomes. Chapter's summaries are nice feature allow quick review for each chapter. Key words and concepts are in bold for easy identification. Personal recounts of diseases and case studies are throughout the text adding a humanizing factor that really brings the content into realistic terms and situations. The language is simple and easy to read. Illustrations and tables are clear, advanced and helpful.

This book has twenty-five chapters which cover adequately all the basic concepts which students need to learn. This book is designed for the university-level non-majors microbiology that has quickly become known for its unique organization, appealing writing style, and current medical applications. Here is a summary of the major topics discussed in each chapter. Chapter 1 is about The Main Themes of Microbiology; Chapter 2: The Chemistry of Biology; Chapter 3: Tools of the Laboratory: The Methods for Studying Microorganisms; Chapter 4: Prokaryotic Profiles: The Bacteria and Archaea; Chapter 5: Eukaryotic Cells and Microorganisms; Chapter 6: An Introduction to the Viruses; Chapter 7: Microbial Nutrition, Ecology, and Growth; Chapter 8: Microbial Metabolism: The Chemical Crossroads of Life; Chapter 9: Microbial Genetics; Chapter 10: Genetic Engineering: A Revolution in Molecular Biology; Chapter 11: Physical and Chemical Control of Microbes; Chapter 12: Drugs, Microbes, Host—The Elements of Chemotherapy; Chapter 13: Microbe-Human Interactions: Infection and Disease; Chapter 14: Host Defenses I: Overview and Nonspecific Defenses; Chapter 15: Host Defenses II: Specific Immunity and Immunization; Chapter 16: Disorders in Immunity; Chapter 17: Diagnosing Infections; I like in particular chapter 17 which brings together in one place the current methods used to diagnose infectious diseases. The chapter starts with collecting samples from the patient and details the biochemical, serological, and molecular methods used to identify causative microbes. Chapter 18: Infectious Diseases Affecting the Skin and Eyes; Chapter 19: Infectious Diseases Affecting the Nervous System; Chapter 20: Infectious Diseases Affecting the Cardiovascular and Lymphatic Systems; Chapter 21: Infectious Diseases Affecting the Respiratory System; Chapter 22: Infectious Diseases Affecting the Gastrointestinal Tract; Chapter 23: Infectious Diseases Affecting the Genitourinary System; Chapter 24: Environmental Microbiology and finally Chapter 25: Applied and Industrial Microbiology.

We admire the inclusive nature of the textbook and the approach of describing the diseases that is very successful and easy to

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Mohannad AL Saghir, Shadi Abu Baker

Faculty at the College of Arts and Sciences, Ohio University, USA

Correspondence: Mohannad AL-Saghir, Faculty at the College of Arts and Sciences, Ohio University Zanesville, Zanesville Ohio 43701, United States, Email al-saghi@ohio.edu

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comprehend. The author of the book is an experienced educator. Marjorie Kelly Cowan successfully covers the microbial diseases by consistently covering multiple causative agents of a particular disease in the same section and summarizing this information in tables. To encourage clinical and critical thinking of the students, the author used a refreshingly logical, systematic, and intuitive approach; in which the diseases are categorizing based on the causative agents and the presenting symptoms in the patient.

The current edition is updated with the McGraw-Hill Connect plus Microbiology's integrated learning platform that provides auto-graded assessments, a customizable, assignable eBook, an adaptive diagnostic tool, and powerful reporting against learning outcomes and level of difficulty—all in an easy-to-use interface with the ability to access all that inside the backboard. The instructor can also use the Instructional art program that helps students visualize complex concepts and the well-established relevant case files that frame each chapter.

Reading and learning from the twenty-five detailed chapters of a book of this kind containing so many related topics can easily overwhelm non-expert readers. Credit should be given to the author for simplifying the topics and organizing the discussions neatly and systemically for each chapter. We recommend this textbook to instructors of university-level non-majors microbiology that focus on clinical presentation.¹⁻³

Acknowledgments

None.

Conflicts of interest

Authors declare that there is no conflict of interest.

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