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BRIEF CONTENTS

MATHEMATICS

CONTENTS

Analysis of Algorithms

🖊 **Subhash K. Shinde** | **Monika Mangla** | **Nonita Sharma**

📄 **240** | © **2021**

ISBN: 9789390394135

ABOUT THE BOOK

The purpose of this textbook is to introduce the reader to the basics of algorithms, analysis techniques, and designing of several algorithmic techniques in a simplistic and practical way. This book is especially designed to present the concepts in a naïve and easy fashion so that readers can grasp the concepts easily and can apply them for solving real-life problems. More emphasis has been laid on presenting the several mathematical concepts in a detailed and descriptive manner. The book has been specifically crafted for the subject - Design and Analysis of the Algorithms with an aim to assimilate the basics of algorithm analysis for an introductory graduate course. It can also be used as a reference for self-study by researchers in the field of Computer Science or Computer Applications. Additionally, it can serve as an exemplar guide for the students in mathematics and allied branches to understand the principles of Analysis of Algorithms and Data structures. Hence, the book serves to establish a platform to understand the fundamentals of the subject persuading its readers to strive in-depth and multidimensional knowledge of the advanced topics related to the application of subject in real life scenario.

FEATURES

- Presentation of the concepts in the simplistic and descriptive manner.
- Numerical examples for enhanced understanding of the readers for each topic.
- Coverage of wide range of algorithmic techniques instead of focusing only on techniques.
- Inclusion of Exercise questions at the end of each chapter for self-practicing.
- Appendix at the end consisting of multiple-choice questions enabling the readers to assess their understandability.
- The book also contains programs in c language in appendix section that helps the readers to practically implement the concept

CONTENTS

ABOUT THE AUTHOR(S)

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Monika Mangla, Head of Department for Computer Science and Engineering (AI&ML) Lokmanya Tilak College of Engineering Navi Mumbai

Nonita Sharma, Assistant Professor Dr B. R Ambedkar National Institute of Technology Jalandhar

NEW

E-Book available
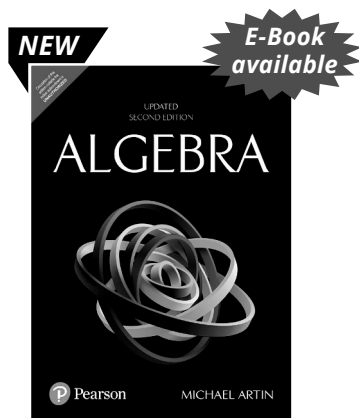
ISBN: 9789353432751

Algebra, Updated, 2/e

Michael Artin

560 | © **2024**

ABOUT THE BOOK

Algebra, Updated 2nd Edition by Michael Artin is ideal for the honors undergraduate or introductory graduate course. This revision of the classic text incorporates 20 years of feedback and the author's own teaching experience. It discusses concrete topics of algebra in greater detail than most texts, preparing students for the more abstract concepts; linear algebra is tightly integrated throughout.

FEATURES

- High emphasis on concrete topics such as symmetry, linear groups, quadratic number fields, and lattices prepares students to learn more abstract concepts.
- The chapter organization emphasizes the connections between algebra and geometry at the start, with the beginning chapters containing the content most important for students in other fields.
- Treatment beyond the basics sets this book apart. Students with a reasonably mature mathematical background will benefit from the relatively informal treatments the author gives to the more advanced topics.
- Content notes in the preface include teaching tips from the author's own classroom experience.
- Challenging exercises are indicated with an asterisk, allowing instructors to easily create the right assignments for their class.

CONTENTS

1. Matrices
2. Groups
3. Vector Spaces
4. Linear Operators
5. Applications of Linear Operators
6. Symmetry
7. More Group Theory
8. Bilinear Forms
9. Linear Groups
10. Group Representations
11. Rings
12. Factoring
13. Quadratic Number Fields
14. Linear Algebra in a Ring
15. Fields
16. Galois Theory

ABOUT THE AUTHOR

Michael Artin (born 1934) is an American mathematician and a professor at MIT, known for his contributions to algebraic geometry. He is the son of Emil Artin. He was brought up in Indiana. In the early 1960s he spent time at the IHES in France, contributing to the SGA4 volumes of the Séminaire de géométrie algébrique, on topos theory and étale cohomology.He also worked on the question of characterising the representable functors in the category of schemes; this led to the Artin approximation theorem, in local algebra. This work also gave rise to the ideas of an algebraic space and algebraic stack, and has proved very influential in moduli theory. Additionally, he has made contributions to the deformation theory of algebraic varieties. In 2002, he won the American Mathematical Society's annual Steele Prize for Lifetime Achievement. He is currently working on non-commutative rings, especially geometric aspects.

Linear Algebra and Its Applications, 5/e

David C. Lay | **Steven R. Lay** | **Judi J. McDonald**
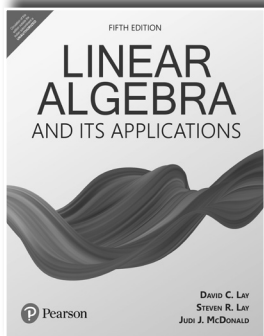
ABOUT THE BOOK

With traditional linear algebra texts, the course is relatively easy for students during the early stages as material is presented in a familiar, concrete setting. However, when abstract concepts are introduced, students often hit a wall. Instructors seem to agree that certain concepts (such as linear independence, spanning, subspace, vector space, and linear transformations) are not easily understood and require time to assimilate. These concepts are fundamental to the study of linear algebra, so students' understanding of them is vital to mastering the subject. This text makes these concepts more accessible by introducing them early in a familiar, concrete Rn setting, developing them gradually, and returning to them throughout the text so that when they are discussed in the abstract, students are readily able to understand.

FEATURES

- More than 25% of the exercises are new or updated, especially computational exercises.
- Linear transformations form a "thread" that is woven into the fabric of the text. Their use enhances the geometric flavor of the text.
- A modern view of matrix multiplication is presented, with definitions and proofs focusing on the columns of a matrix rather than on the matrix entries.
- Focus on visualization: Each major concept in the course is given a geometric interpretation because many students learn better when they can visualize an idea.
- Numerical Notes provide a realistic slant to the text. Students are reminded frequently of issues that arise in real-life applications of linear algebra.
- Applications are varied and relevant. Each chapter opens with an introductory vignette that sets the state for some applications of linear algebra and provides a motivation for developing the mathematics that follows.
- Exercise sets are meticulously constructed and consist of the following elements. Each section features an abundant supply of exercises, ranging from routine computations to conceptual questions to applications. Innovative questions pinpoint conceptual difficulties that the authors have found in student papers over the years.

CONTENTS

1. Linear Equations in Linear Algebra
2. Matrix Algebra
3. Determinants
4. Vector Spaces
5. Eigenvalues and Eigenvectors
6. Orthogonality and Least Squares
7. Symmetric Matrices and Quadratic Forms
8. The Geometry of Vector Spaces
   Appendix

ABOUT THE AUTHOR(S)
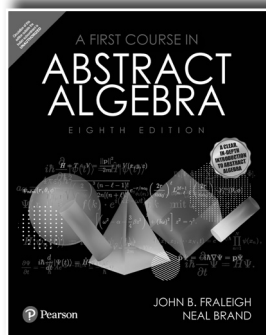
David C. Lay University of Maryland
Steven R. Lay Lee University
Judi J. McDonald Washington State University

A First Course in Abstract Algebra, 8/e

✒ **John B. Fraleigh** | **Neal Brand**

📄 **444** | © **2022**

Web Supplements

ABOUT THE BOOK

A First Course in Abstract Algebra, 8th Edition retains its hallmark goal of covering all the topics needed for an in-depth introduction to abstract algebra — and is designed to be relevant to future graduate students, future high school teachers, and students who intend to work in industry. New co-author Neal Brand has revised this classic text carefully and thoughtfully, drawing on years of experience teaching the course with this text to produce a meaningful and worthwhile update. This in-depth introduction gives students a firm foundation for more specialized work in algebra by including extensive explanations of the what, the how, and the why behind each method the authors choose.

FEATURES

- A focus on groups, rings and fields gives students a firm foundation for more specialized work by emphasizing an understanding of the nature of algebraic structures.
- Gives clear and concise explanations of the theory, with well-thought-out examples to highlight key points and clarify more difficult concepts.
- UPDATED - Many exercises in the text have been updated, and many are new. Most exercise sets are broken down into parts consisting of computations, concepts, and theory.
- NEW - Applied topics — such as RSA encryption and coding theory as well as examples of applying Gröbner bases — have been added to the 8th Edition.
- Historical notes written by Victor Katz, an authority on the history of math, provide valuable perspective.

CONTENTS

I. Groups and Subgroups
- 9. Binary Operations
- 10. Groups
- 11. Abelian Groups
- 12. Nonabelian Examples
- 13. Subgroups
- 14. Cyclic Groups
- 15. Generating Sets and Cayley Digraphs

II. Structure of Groups
- 16. Groups and Permutations
- 17. Finitely Generated Abelian Groups
- 18. Cosets and the Theorem of Lagrange
- 19. Plane Isometries

III. Homomorphisms and Factor Groups
- 20. Factor Groups
- 21. Factor-Group Computations and Simple Groups
- 22. Groups Actions on a Set
- 23. Applications of G -Sets to Counting

IV. Advanced Group Theory
- 24. Isomorphism Theorems
- 25. Sylow Theorems
- 26. Series of Groups
- 27. Free Abelian Groups

- 28. Free Groups
- 29. Group Presentations

V. Rings and Fields
- 30. Rings and Fields
- 31. Integral Domains
- 32. Fermat's and Euler's Theorems
- 33. Encryption

VI. Constructing Rings and Fields
- 34. The Field of Quotients of an Integral Domain
- 35. Rings and Polynomials
- 36. Factorization of Polynomials over Fields
- 37. Algebraic Coding Theory
- 38. Homomorphisms and Factor Rings
- 39. Prime and Maximal Ideals
- 40. Noncommutative Examples

VII. Commutative Algebra
- 41. Vector Spaces
- 42. Unique Factorization Domains
- 43. Euclidean Domains
- 44. Number Theory
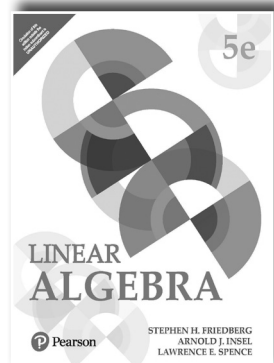- 45. Algebraic Geometry
- 46. Gröbner Basis for Ideals

ABOUT THE AUTHOR(S)
John B Fraleigh, University of Rhode Island
Neal Brand, University of North Texas

Linear Algebra, 5/e

Stephen H. Friedberg | **Arnold J. Insel** | **Lawrence E. Spence**

Web Supplements

616 | © **2022**

ABOUT THE BOOK
This acclaimed theorem-proof text presents a careful treatment of the principal topics of linear algebra. It emphasizes the symbiotic relationship between linear transformations and matrices, but states theorems in the more general infinite-dimensional case where appropriate. Applications to such areas as differential equations, economics, geometry, and physics appear throughout, and can be included at the instructor's discretion.

This book is especially suited to a second course in linear algebra that emphasizes abstract vector spaces, although it can be used in a first course with a strong theoretical emphasis. Updates to the 5th Edition include revised proofs of some theorems, additional examples, and new exercises. Also new in this revision are online solutions for selected theoretical exercises, accessible by short URLs at point-of-use.

ISBN: 9789390168132

FEATURES
- Revised - A streamlined presentation, with clarified exposition informed by extensive reviews from instructors.
- Revised - Proofs of some theorems have been revised for further clarification.
- New - Additional examples and exercises throughout.

- New - Online solutions to selected theoretical exercises in each section of the book:
  - These exercises each have their exercise number printed within a gray box, and the last sentence of each of these exercises gives a short URL for its online solution.
- New - Four new applications available online of the content in Sections 2.3, 5.3, 6.5, and 6.6. Short URLs at point-of-use provide easy access to this material.

CONTENTS
1. Vector Spaces
2. Linear Transformations and Matrices
3. Elementary Matrix Operations and Systems of Linear Equations
4. Determinants

5. Diagonalization
6. Inner Product Spaces
7. Canonical Forms

1.6

ABOUT THE AUTHOR(S)

Stephen H. Friedberg holds a BA in mathematics from Boston University and MS and PhD degrees in mathematics from Northwestern University, and was awarded a Moore Postdoctoral Instructorship at MIT. He served as a director for CUPM, the Mathematical Association of America's Committee on the Undergraduate Program in Mathematics. He was a faculty member at Illinois State University for 32 years, where he was recognized as the outstanding teacher in the College of Arts and Sciences in 1990. He has also taught at the University of London, the University of Missouri, and at Illinois Wesleyan University. He has authored or coauthored articles and books in analysis and linear algebra.

Arnold J. Insel received BA and MA degrees in mathematics from the University of Florida and a PhD from the University of California at Berkeley. He served as a faculty member at Illinois State University for 31 years and at Illinois Wesleyan University for two years. In addition to authoring and co-authoring articles and books in linear algebra, he has written articles in lattice theory, topology, and topological groups.

Lawrence E. Spence holds a BA from Towson State College and MS and PhD degrees in mathematics from Michigan State University. He served as a faculty member at Illinois State University for 34 years, where he was recognized as the outstanding teacher in the College of Arts and Sciences in 1987. He is an author or co-author of nine college mathematics textbooks, as well as articles in mathematics journals in the areas of discrete mathematics and linear algebra.
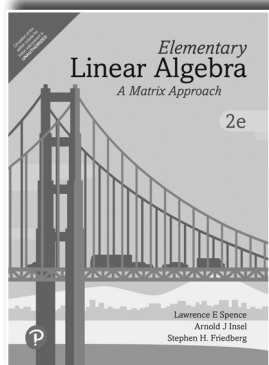
Elementary Linear Algebra, 2/e

Lawrence E. Spence | Arnold J. Insel | Stephen H Friedberg

📄 **648** | © **2019**

Web Supplements

ABOUT THE BOOK

Based on the recommendations of the Linear Algebra Curriculum Study Group, this introduction to linear algebra offers a matrix-oriented approach with more emphasis on problem solving and applications. Throughout the text, use of technology is encouraged. The focus is on matrix arithmetic, systems of linear equations, properties of Euclidean n-space, eigenvalues and eigenvectors, and orthogonality. Although matrix-oriented, the text provides a solid coverage of vector spaces.

FEATURES

- Examples in book are accompanied by similar practice problems that enable students to test their understanding of the material.
- Most sections include approximately twenty true/false exercises designed to test students understanding of the conceptual ideas in each section.
- For a proof-oriented course, the authors have included a significant number of accessible exercises requiring proofs, ordered according to difficulty.
- All computational exercises are designed so that the calculations involve "nice" numbers.
- The authors have added an appendix introducing MATLAB.

CONTENTS

1. Matrices, Vectors, and Systems of Linear Equations
2. Matrices and Linear Transformations
3. Determinants
4. Subspaces and Their Properties
5. Eigenvalues, Eigenvectors, and Diagonalization
6. Orthogonality
7. Vector Spaces

ABOUT THE AUTHOR(S)

Stephen H. Friedberg, Illinois State University
Arnold J. Insel, Illinois State University
Lawrence E. Spence, Illinois State University
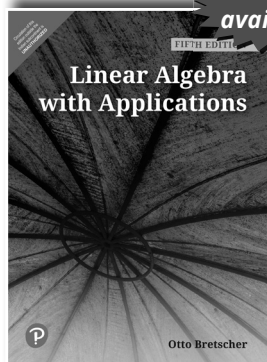
Linear Algebra with Applications, 5/e

Otto Bretscher

📄 **528** | © **2019**

Web Supplements

ISBN: 9789353433048

ABOUT THE BOOK
Linear Algebra with Applications, Fifth Edition emphasizes linear transformations as a unifying theme. This elegant textbook combines a user-friendly presentation with straightforward, lucid language to clarify and organize the techniques and applications of linear algebra. Exercises and examples make up the heart of the text, with abstract exposition kept to a minimum. Exercise sets are broad and varied and reflect the author's creativity and passion for this course.

FEATURES
- **Linear transformations** are introduced early in the text to make the discussion of matrix operations more meaningful and easier to navigate.
- **Visualization and geometrical interpretation** are emphasized extensively throughout the text.
- **Fifty to sixty True/False questions** conclude every chapter, testing conceptual understanding and encouraging students to read the text.
- **Historical problems** from ancient Chinese, Indian, Arabic, and early European sources add diversity to the selection of exercises.
- **Rotations, reflections, projections, and shears** are used throughout to illustrate new ideas.
- **Commutative diagrams** enable students to visualize the relations between linear transformations.

CONTENTS
1. Linear Equations
2. Linear Transformations
3. Subspaces of Rn and Their Dimensions
4. Linear Spaces
5. Orthogonality and Least Squares
6. Determinants
7. Eigenvalues and Eigenvectors
8. Symmetric Matrices and Quadratic Forms
9. Linear Differential Equations

ABOUT THE AUTHOR
Otto Bretscher, Colby College, Waterville
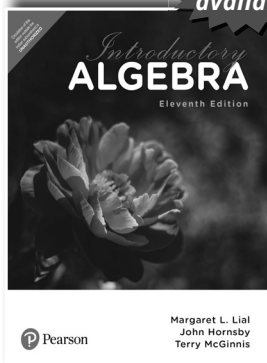
Introductory Algebra, 11/e

Marge Lial | **John Hornsby** | **Terry McGinnis**

📄 **752** | © **2019**

Web Supplements

ISBN: 9789353436896

ABOUT THE BOOK
This book has helped thousands of students succeed in the **Introductory Algebra** course by combining clear, concise writing and examples with carefully crafted exercises to support skill development and conceptual understanding. Written with the developmental learner in mind, the precise, accessible writing style delivers help precisely when needed. This revision faithfully continues to support students with enhancements in the text to encourage conceptual understanding beyond skills

1.8

and procedures. Student-oriented features throughout the text, including the *Relating Concepts exercises*, *Guided Solutions, and the Test Your Word Power*, make this text one of the most well-rounded and student-friendly on the market.

FEATURES

- **Learning Objectives** begin each section, and all material is keyed to these objectives to let students and instructors know exactly what will be covered.
- An **emphasis on problem solving** is introduced and integrated as a six-step process for solving application problems algebraically: *Read, Assign a Variable, Write an Equation, Solve, State the Answer, and Check.*

- **Margin Problems** allow students to immediately practice the example material and check their answer at the bottom of the page in preparation for the exercise sets.
- **Pointers** within examples, **Cautions** and **Notes** provide students with important, on-the-spot reminders and warnings about common pitfalls.
- **Real-Life Applications** with interesting data are used in many new or updated examples and exercises throughout the text.
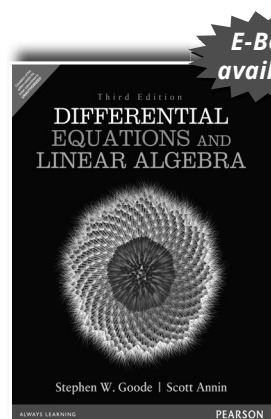
CONTENTS

1. The Real Number System
2. Equations, Inequalities, and Applications
3. Graphs of Linear Equations and Inequalities in Two Variables
4. Systems of Linear Equations and Inequalities

5. Exponents and Polynomials
6. Factoring and Applications
7. Rational Expressions and Applications
8. Roots and Radicals
9. Quadratic Equations

ABOUT THE AUTHOR(S)

Marge Lial was a pioneering author and a visionary teacher who established features that are now standard in nearly all developmental math titles.

John Hornsby have experience of more than twenty-five years of teaching at the high school and university levels and fifteen years of writing mathematics textbooks.

E-Book available

Third Edition
DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA

Stephen W. Goode | Scott Annin

ALWAYS LEARNING   PEARSON

ISBN: 9789332571631

Differential Equations and Linear Algebra, 3/e

✎ **Stephen W. Goode**

📄 **800** | © **2015**

ABOUT THE BOOK

For combined differential equations and linear algebra courses teaching students who have successfully completed three semesters of calculus. This complete introduction to both differential equations and linear algebra presents a carefully balanced and sound integration of the two topics. It promotes in-depth understanding rather than rote memorization, enabling students to fully comprehend abstract concepts and leave the course with a solid foundation in linear algebra. Flexible in format, it explains concepts clearly and logically with an abundance of examples and illustrations, without sacrificing level or rigor. A vast array of problems supports the material, with varying levels from which students/instructors can choose.

CONTENTS

1. First-Order Differential Equations
2. Matrices and Systems of Linear Equations
3. Determinants
4. Vector Spaces
5. Linear Transformation

6. Linear Differential Equations of Order n
7. Systems of Differential Equations
8. The Laplace Transform and Some Elementary Applications
9. Series Solutions to Linear Differential Equations

Appendices
A. Review of Complex Numbers
B. Review of Partial Fractions
C. Review of Integration Techniques

D. Linearly Independent Solutions to $x^2 y n + x p(x) y 1 + q(x) y = 0$
E. Answers to Odd-Numbered Exercises

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Stephen W. Goode, California State University, Fullerton
Scott A. Annin, California State University, Fullerton
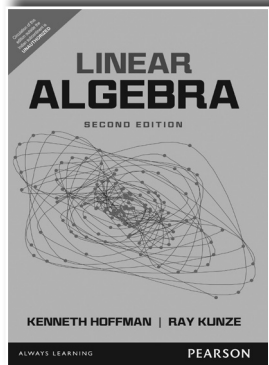
Linear Algebra, 2/e

✎ **Kenneth M Hoffman** | **Ray Kunze**

▯ **592** | © **2015**

ABOUT THE BOOK
This introduction to linear algebra features intuitive introductions and examples to motivate important ideas and to illustrate the use of results of theorems.

CONTENTS
1. Linear Equations
2. Vector Spaces
3. Linear Transformations
4. Polynomials
5. Determinants

6. Elementary canonical Forms
7. Rational and Jordan Forms
8. Inner Product Spaces
9. Operators on Inner Product Spaces
10. Bilinear Forms
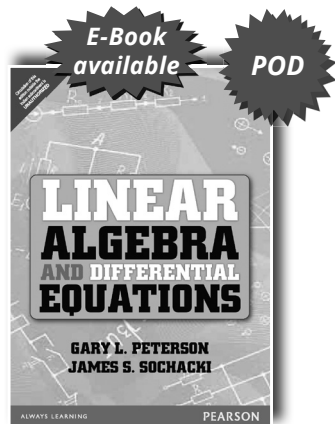
LINEAR ALGEBRA AND DIFFERENTIAL EQUATIONS

GARY L. PETERSON
JAMES S. SOCHACKI

ALWAYS LEARNING   PEARSON

Linear Algebra and Differential Equations

Gary L. Peterson | **James S. Sochacki**

480 | © 2015

ABOUT THE BOOK

Linear Algebra and Differential Equations has been written for a one-semester combined linear algebra and differential equations course, yet it contains enough material for a two-term sequence in linear algebra and differential equations. By introducing matrices, determinants, and vector spaces early in the course, the authors are able to fully develop the connections between linear algebra and differential equations. The book is flexible enough to be easily adapted to fit most syllabi, including separate courses that that cover linear algebra in the first followed by differential equations in the second. Technology is fully integrated where appropriate, and the text offers fresh and relevant applications to motivate student interest.

FEATURES

- Offers a solid foundation in both linear algebra and differential equations, with an emphasis on finding connections between the two subjects.
- Contains applications to many areas, including engineering, business, and life sciences.
- Maple exercises incorporated throughout; support is also offered to users of Mathematica and Matlab in the technology resource manual.

CONTENTS

1. Matrices and Determinants.
2. Vector Spaces.
3. First Order Ordinary Differential Equations.
4. Linear Differential Equations.
5. Linear Transformations and Eigenvalues and Eigenvectors.

Answers to Odd-Numbered Exercises.

6. Systems of Differential Equations.
7. The Laplace Transform.
8. Power Series Solutions to Linear Differential Equations.
9. Inner Product Spaces.

Index of Maple Commands.

ABOUT THE AUTHOR(S)

Gary L. Peterson, James Madison University
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NEW

E-Book available
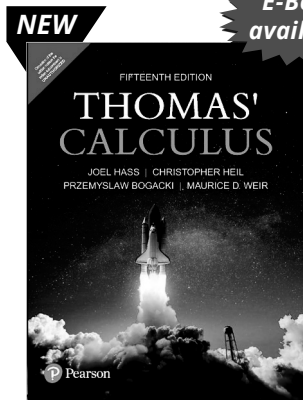
ISBN: 9788119896608

Thomas' Calculus, 15/e

Maurice D. Weir | **Joel Hass** | **Christopher Heil** | **Przemyslaw Bogacki**

📄 1220 | © 2024

Web Supplements

ABOUT THE BOOK

Thomas' Calculus goes beyond memorizing formulas and routine procedures to help students develop deeper understanding. It guides students to a level of mathematical proficiency and maturity needed for the course, with support for those who require it through its balance of clear and intuitive explanations, current applications and generalized concepts. The 15th Edition meets the needs of students with increasingly varied levels of readiness for the calculus sequence. This revision also adds exercises, revises figures and narrative for clarity, and updates many applications with modern topics.

FEATURES

- Many narrative clarifications and revisions have been made throughout the text.
- A new appendix on Determinants and Gradient Descent has been added, covering many topics relevant to students interested in Machine Learning and Neural Networks.
- Many updated graphics and figures have been enhanced to bring out clear visualization and mathematical correctness.
- Many exercise instructions have been clarified, such as suggesting where the use of a calculator may be needed.
- Notation of inverse trig functions has been changed throughout the text to favor arcsin notation over $\sin^{-1}$, etc.

CONTENTS

1. Functions
2. Limits and Continuity
3. Derivatives
4. Applications of Derivatives
5. Integrals
6. Applications of Definite Integrals
7. Transcendental Functions
8. Techniques of Integration
9. First-Order Differential Equations
10. Infinite Sequences and Series
11. Parametric Equations and Polar Coordinates
   Appendix A
   Appendix B (online)
   Answers to Odd–Numbered Exercises
   Applications Index
   Subject Index
   A Brief Table of Integrals
   Credits

ABOUT THE AUTHOR(S)

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Christopher E. Heil Georgia Institute of Technology,
Maurice D. Weir Naval Postgraduate School,
Przemyslaw Bogacki Old Dominion University

Vector Geometry and Elements of Calculus
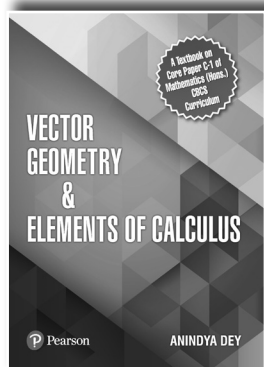
✒ **Anindya Dey**

📄 **724** | © **2021**

ABOUT THE BOOK

The present volume ***Vector Geometry and Elements of Calculus*** is primarily a text-book meant for the students beginning their academic journey with mathematics as their major subject in the CBCS curriculum. The book although consists of nine chapters on four different topics (viz. Vectors, Geometry, Calculus and Differential equations of first order) it is not just a compiled work—instead, the author claims to render some ingenuity in its representation as he has made honest attempts to twine these heterogeneous topics by making sensible yet limited use of vector and matrix algebra occasionally in the branches Geometry and Calculus and tried to invoke physical insight to what is being taught to instill a spirit of global learning into the readers. Incisive remarks put at the ends of some worked-out examples and some of the theoretical discussions are exceptionally bright features not commonly found in the popular texts.

FEATURES

- Written based on the UGC proposed CBCS curriculum and more than 100% coverage of the topics prescribed in the core paper C- 1 [Calculus]
- Over 375 worked-out examples: 80% meant for mediocre students and 20% designed for advanced learners
- Over 350 MCQ's on the content of this book
- More than 180 figures to supplement the text
- End-of-chapter exercises of different variety for providing the learner's good practice
- Hints and Solutions to the exercises
- Bridging of different ideas of the four main areas through cross-references
- Compactness and lucidity of presentation

CONTENTS

1. Vector Algebra and Its Applications
2. Calculus of Vector-valued Functions
3. Two-Dimensional Geometry
4. Three-Dimensional Geometry
5. Elements of Differential Calculus
6. Application of Differential Calculus
7. Reduction Formulae
8. Application of Integral Calculus
9. Differential Equations of First Order and First Degree

Multiple Choice Questions
Answers to MCQ

Appendix A: Tracing of Plane Curves
Appendix B: L'Hôspital's Rule for Indeterminate Forms
Appendix C: Alternative Proof of Vector Triple Product Formula
Hints and Solutions to Exercises
Bibliography
Index

ABOUT THE AUTHOR

Anindya Dey is presently working as a Senior Assistant Professor in the Department of Mathematics, St. Xavier's College (Autonomous), Kolkata. He has been teaching at the undergraduate level for more than two decades primarily the topics like Differential Equations, Linear Algebra, Probability Theory, Vector Algebra & Vector Analysis, Mechanics and Special Theory of Relativity. He has so far authored two books, viz. Metric Spaces and Complex Analysis [New Academic Science, London, UK] and Differential Equations—A Linear algebra Approach [CRC Press]. Prof. Dey completed M.Sc. & M.Phil. in Applied Mathematics from the University of Kolkata and started his research career as CSIR Fellow in the Department of Applied Mathematics, C.U. but later on moved to Indian Statistical Institute, Kolkata. Quantum Mechanics and Supersymmetry are his areas of research interest. Presently he is working on Lie group theoretic ideas related to differential equations

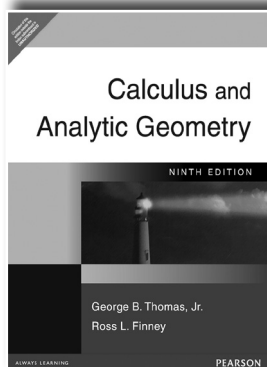## Advanced Calculus

ISBN: 9788131768570

✒ **Gerald B. Folland**

📄 **476** | © **2002**

ABOUT THE BOOK

This text presents a unified view of calculus in which theory and practice reinforce each other. It covers the theory and applications of derivatives (mostly partial), integrals, (mostly multiple or improper), and infinite series (mostly of functions rather than of numbers), at a deeper level than is found in the standard advanced calculus books.

FEATURES

- Single and Multivariable Analysis equally balanced
- A focus on calculus itself and its applications
- Numerous worked-out examples and exercises throughout
- A chapter on Fourier analysis

CONTENTS

1. Setting the Stage.
2. Differential Calculus
3. The Implicit Function Theorem and Its Applications
4. Integral Calculus
5. Line and Surface Integrals; Vector Analysis
6. Infinite Series
7. Fourier Series
8. Fourier Series

Calculus & Analytical Geometry, 9/e

ISBN: 9788177583250

✒ **George B. Thomas Jr.**

📄 **1264** | © **2006**

ABOUT THE BOOK

George Thomas' clear, precise calculus text with superior applications defined the modern-day, three-semester or four-quarter calculus course. The ninth edition of this proven text has been carefully revised to give students the solid base of material they will need to succeed in math, science, and engineering programs. This edition includes recent innovations in teaching and learning that involve technology, projects, and group work.

FEATURES

- Exercises have been reorganized to facilitate assigning a subset of the material in a section.
- New Computer Algebra System (CAS) explorations and projects that require a CAS have been included.
- Technology Connection notes appear throughout the text suggesting experiments students might do with a grapher to supplement their understanding of given topic.

CONTENTS
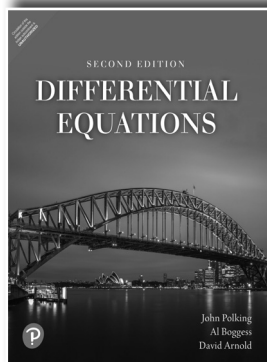
Differential Equations, 2/e

John Polking | **Al Boggess** | **David Arnold**

656 | © **2019**

Web Supplements

ABOUT THE BOOK

Combining traditional differential equation material with a modern qualitative and systems approach, this new edition continues to deliver flexibility of use and extensive problem sets. The 2nd Edition's refreshed presentation includes extensive new visuals, as well as updated exercises throughout.

ISBN: 9789353432270

FEATURES

- Unique blend of traditional algebraic and modern qualitative geometric approaches.
- Strong systems approach.
- Novel modeling approach.
- Flexible use of technology.

CONTENTS

1. Introduction to Differential Equations
2. First-Order Equations
3. Modeling and Applications
4. Second-Order Equations
5. The Laplace Transform
6. Numerical Methods
7. Matrix Algebra
8. An Introduction to Systems
9. Linear Systems with Constant Coefficients
10. Nonlinear Systems
11. Series Solutions to Differential Equations

Discrete Mathematics with Graph Theory, 3/e
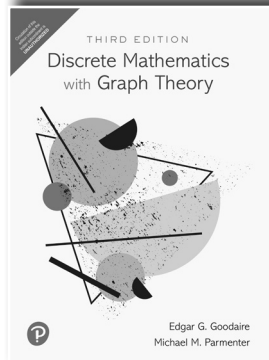
Edgar Goodaire | **Michael Parmenter**

📄 **592** | © **2019**

ABOUT THE BOOK

Far more "user friendly" than the vast majority of similar books, this text is truly written in a friendly, conversational, humorous style with the "beginning" reader in mind. The pace is tight, the style is light, and the text emphasizes theorem proving throughout. The authors emphasize "Active Reading," a skill vital to success in learning how to think mathematically and write clean, error-free programs.

ISBN: 9789353433017

FEATURES

- A friendly, conversational, humorous style – Makes this top seller stimulating and engaging for the reader.
- Emphasis on writing and critical-thinking skills.
- More than 300 worked examples and 3500 exercises. The problem sets are carefully graded by level of difficulty.
- A FREE Student Solutions Manual is built into the back of the text.
- Topics in discrete math are used as a vehicle for teaching proofs.
- An unusually strong emphasis on graph theory, incorporating its coverage throughout six chapters.

CONTENTS

1. Logic
2. Sets and Relations
3. Functions
4. The Integers
5. Induction and Recursion
6. Principles of Counting
7. Permutations and Combinations
8. Algorithms
9. Graphs
10. Paths and Circuits
11. Applications of Paths and Circuits
12. Trees
13. Planar Graphs and Colorings
14. The Max Flow -- Min Cut Theorem

ABOUT THE AUTHOR

Edgar Goodaire Honorary Research Professor (retired). PhD British Columbia, 1973 B.Sc. Toronto, 1969. CMS Distinguished Service Award, 2004.
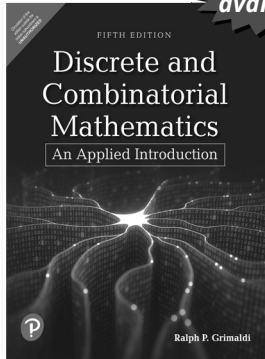

Discrete and Combinatorial Mathematics, 5/e

ISBN: 9789353433055

✒ **Ralph P. Grimaldi**

📄 **1008** | © **2019**

Web Supplements

ABOUT THE BOOK
This fifth edition continues to improve on the features that have made it the market leader. The text offers a flexible organization, enabling instructors to adapt the book to their particular courses. The book is both complete and careful, and it continues to maintain its emphasis on algorithms and applications. Excellent exercise sets allow students to perfect skills as they practice. This new edition continues to feature numerous computer science applications—making this the ideal text for preparing students for advanced study.

FEATURES
- Enhanced mathematical approach with carefully thought out examples, including many examples with computer sciences applications.
- New material on cryptology, private-key cryptosystems and public-key RSA cryptosystems.
- Expanded treatment of discrete probability.
- Includes historical reviews and biographies that bring a human element to their assignments.
- Provides chapter summaries to allow students to review what they have learned.

CONTENTS

PART 1. FUNDAMENTALS OF DISCRETE MATHEMATICS.
1. Fundamental Principles of Counting.
2. Fundamentals of Logic.
3. Set Theory
4. Properties of the Integers: Mathematical Induction
5. Relations and Functions.
6. Languages: Finite State Machines.
7. Relations: The Second Time Around.

PART 2. FURTHER TOPICS IN ENUMERATION.
8. The Principle of Inclusion and Exclusion.
9. Generating Functions.
10. Recurrence Relations.

PART 3. GRAPH THEORY AND APPLICATIONS.
11. An Introduction to Graph Theory.
12. Trees.
13. Optimization and Matching

PART 4. MODERN APPLIED ALGEBRA.
14. Rings and Modular Arithmetic
15. Boolean Algebra and Switching Functions.
16. Groups, Coding Theory, and Polya's Theory of Enumeration.
17. Finite Fields and Combinatorial Designs.

ABOUT THE AUTHOR
Ralph Peter Grimaldi (born January 1943) is an American mathematician specializing in discrete mathematics who is a professor at Rose-Hulman Institute of Technology.

Introductory Combinatorics, 5/e
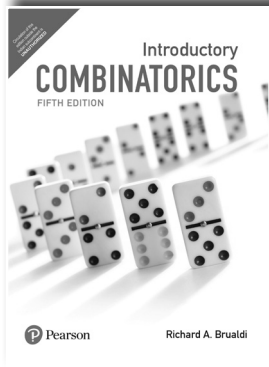
✒ **Richard A. Brualdi**

📄 **624** | © **2019**

ABOUT THE BOOK
This trusted best-seller covers the key combinatorial ideas–including the pigeon-hole principle, counting techniques, permutations and combinations, Pólya counting, binomial coefficients, inclusion-exclusion principle, generating functions and recurrence relations, combinatorial structures (matchings, designs, graphs), and flows in networks. The 5th Edition incorporates feedback from users to the exposition throughout and adds a wealth of new exercises.

FEATURES
- **Covers a wide range of topics:**
  - Dilworth's Theorem
  - Partitions of integers
  - Counting sequences and generating functions
  - Extensive graph theory coverage
- **A clear and accessible presentation**, written from the student's perspective, facilitates understanding of basic concepts and principles.
- **An excellent treatment of Pólya's Counting Theorem** that does not assume students have studied group theory.
- **Many worked examples** illustrate methods used.

CONTENTS
1. What is Combinatorics?
2. The Pigeonhole Principle
3. Permutations and Combinations
4. Generating Permutations and Combinations
5. The Binomial Coefficients
6. The Inclusion-Exclusion Principle and Applications
7. Recurrence Relations and Generating Functions
8. Special Counting Sequences
9. Systems of Distinct Representatives
10. Combinatorial Designs
11. Introduction to Graph Theory
12. More on Graph Theory
13. Digraphs and Networks
14. Pólya Counting

ABOUT THE AUTHOR
Richard A. Brualdi is Bascom Professor of Mathematics, Emeritus at the University of Wisconsin-Madison. He served as Chair of the Department of Mathematics from 1993–1999.
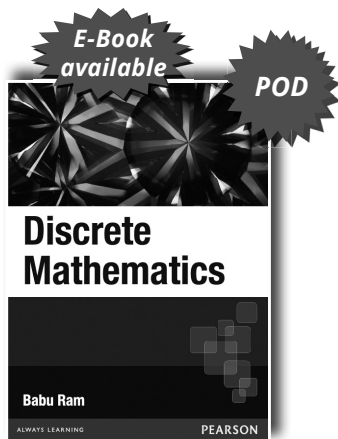
Discrete Mathematics

Babu Ram

584 | © 2011

Web Supplements

Discrete Mathematics

ABOUT THE BOOK

Discrete Mathematics is an integral part of any undergraduate as well as post graduate courses in Computer Science and Mathematics. The syllabi of all these courses have been studied in depth and utmost care has been taken to ensure that all the essential topics in discrete structures are adequately emphasized. The book will enable the students to develop the requisite computational skills needed in software engineering.

FEATURES

- C Programs of important algorithms
- Extensive coverage of Boolean Algebra, Algebraic Structures and Graph Theory
- 550 Solved examples and 170 practice problems with hints/answers

CONTENTS

1. Sets, Relations and Functions
2. Counting
3. Recurrence Relations
4. Logic
5. Algebraic Structures
6. Lattices
7. Boolean Algebra
8. Graphs
9. Finite State Automata
10. Languages and Grammars

ABOUT THE AUTHOR(S)

Babu Ram received his Ph.D. degree in mathematics in 1973 from Kurukshetra University, Kurukshetra, India. He was formerly Professor of Mathematics and Dean, Faculty of Physical Sciences at Maharshi Dayanand University, Rohtak and has been teaching mathematics for the past 36 years. A member of Indian Mathematical Society and the American Mathematical Society, Professor Babu Ram has published 42 research papers in Real and Functional Analysis in international journals of repute. He is on the board of reviewers of both American Mathematical Reviews and Zentralblatt fur Mathematik und ihre Grengebiete, Berlin. Presently, he is working as Director MCA at Manav Rachna International University, Faridabad.

Discrete Mathematical Structures, 6/e
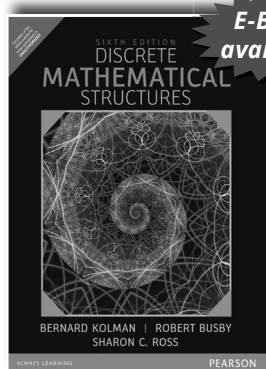
✒ **Bernard Kolman** | **Robert Busby** | **Sharon C. Ross**

📄 **552** | © **2015**

ABOUT THE BOOK

Discrete Mathematical Structures, Sixth Edition, offers a clear and concise presentation of the fundamental concepts of discrete mathematics. Ideal for a one-semester introductory course, this text contains more genuine computer science applications than any other text in the field.

This book is written at an appropriate level for a wide variety of majors and non-majors, and assumes a college algebra course as a prerequisite.

FEATURES

- The focus on computer science prepares students for future computer science careers.
- The emphasis on proof lays the foundation for mathematical thinking.
- Clear organization of topics prevents students from being overwhelmed. The authors treat relations and digraphs as two aspects of the same fundamental idea, which is then used as the basis of virtually all the concepts introduced in the book.
- Vignettes of mathematical history open each chapter, providing students with a practical background of how these ideas were developed.
- Additional number theory coverage provides more information on the properties of integers, including base n representations, and gives more contexts for isomorphism.
- Cryptology is explored throughout the book, introducing students to this exciting field.
- Coverage of coding provides students with a full picture of all of its aspects, including efficiency, effectiveness, and security. A set of coding exercises for each chapter is also included in Appendix C.
- Exercises emphasize multiple representations of concepts, and provide practice on reading and writing mathematical proofs.
- Experiments provide opportunities for in-depth exploration and discovery, as well as for writing and for working in groups. Topics include weighted voting systems, Petri nets, Catalan numbers, and others.
- End-of-chapter material includes Tips for Proofs, a summary of Key Ideas, and a Self-Test, which contains a set of conceptual review questions to help students identify and synthesize the main ideas of each chapter.

CONTENTS

1. Fundamentals
2. Logic
3. Counting
4. Relations and Digraphs
5. Functions
6. Order Relations and Structures
7. Trees
8. Topics in Graph Theory
9. Semigroups and Groups
10. Groups and Coding
11. Languages and Finite-State Machines

ABOUT THE AUTHOR(S)

Bernard Kolman received his BS in mathematics and physics from Brooklyn College in 1954, his ScM from Brown University in 1956, and his PhD from the University of Pennsylvania in 1965, all in mathematics. He has worked as a mathematician for the US Navy and IBM. He has been a member of the mathematics department at Drexel University since 1964, and has served as Acting Head of the department. His research activities have included Lie algebra and perations research. He belongs to a number of professional associations and is a member of Phi Beta Kappa, Pi Mu Epsilon, and Sigma Xi.

Robert C. Busby received his BS in physics from Drexel University in 1963, his AM in 1964 and PhD in 1966, both in mathematics from the University of Pennsylvania. He has served as a faculty member of the mathematics department at Drexel since 1969. He has consulted in applied mathematics and industry and government, including three years as a consultant to the Office of Emergency Preparedness, Executive Office of the President, specializing in applications of mathematics to economic problems. He has written a number of books and research papers on operator algebra, group representations, operator continued fractions, and the applications of probability and statistics to mathematical demography.

Sharon Cutler Ross received a SB in mathematics from the Massachusetts Institute of Technology in 1965, an MAT in secondary mathematics from Harvard University in 1966, and a PhD in mathematics from Emory University in 1976. She has taught junior high, high school, and college mathematics, and has taught computer science at the collegiate level. She has been a member of the mathematics department at DeKalb College. Her current professional interests are in undergraduate mathematics education and alternative forms of assessment. Her interests and associations include the Mathematical Association of America, the American Mathematical Association of Two-Year Colleges, and UME Trends. She is a member of Sigma Xi and other organizations.

Discrete Mathematics for Computer Scientists, 2/e
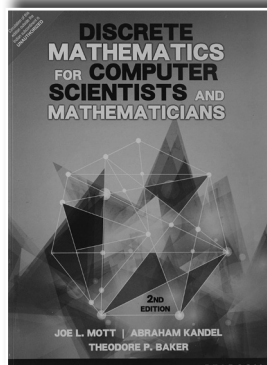
🖋 **Joe L Mott** | **Abraham Kandel**

📄 **768** | © **2015**

ABOUT THE BOOK
This is a lucidly written fine-tuned introduction to discrete mathematics. It is eminently suited for students persuing BCA, MCA and B.E./B.Tech courses. Considering the importance of the subject, quite a number of universities have sought to introduce discrete mathematics as a core subject in the engineering curriculum.

FEATURES
■ Comprehensive discussions on graph theory, mathematical induction, Boolean algebras, logic and other proof techniques and recurrence relations have been dealt with.
■ Gives good insights into graphs as a modeling tool.
■ Gives better understanding of computer solutions of differential equations.
■ Many worked out examples and solutions follow each section.

CONTENTS
- Acknowledgments
- A Note to the Reader
- Foundations
- Elementary Combinatorics
- Recurrence Relations
- Relations and Digraphs
- Graphs
- Boolean Algebras
- Network Flows
- Representation and Manipulation of Imprecision
- Bibliography

Discrete Mathematics, 5/e
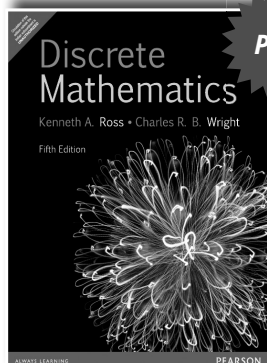
🖋 **Kenneth A Ross** | **Charles R. Wright**

📄 **635** | © **2012**

ABOUT THE BOOK
Revised for extra clarity, the distinguishing characteristic of Ross and Wright is a sound mathematical treatment that increases smoothly in sophistication. The text presents utility-grade discrete math tools so students can understand them, use them, and move on to more advanced mathematical topics

FEATURES
- NEW - Over 270 supplementary exercises All with answers
- NEW - Full chapter on discrete probability
- NEW - Chapter on algebraic structures
- Comprehensive coverage of logic and proofs
- Full chapter on recursion

CONTENTS
1. Sets, Sequences, and Functions
2. Elementary Logic
3. Relations
4. Induction and Recursion
5. Counting
6. Introduction to Graphs and Trees
7. Recursion, Trees and Algorithms
8. Digraphs
9. Discrete Probability
10. Boolean Algebra
11. More on Relations
12. Algebraic Structures
13. Predicate Calculus and Infinite Sets

ABOUT THE AUTHOR(S)
Kenneth A. Ross, University of Oregon
Charles R. Wright, University of Oregon
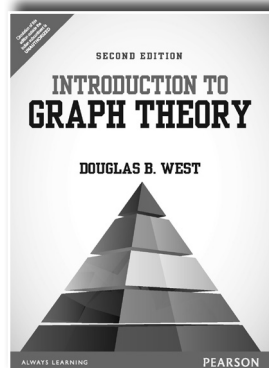
Introduction to Graph Theory, 2/e

✒ **Douglas B. West**

📄 **470** | © **2015**

Web Supplements

ABOUT THE BOOK
For undergraduate or graduate courses in Graph Theory in departments of mathematics or computer science.

This text offers a comprehensive and coherent introduction to the fundamental topics of graph theory. It includes basic algorithms and emphasizes the understanding and writing of proofs about graphs. Thought-provoking examples and exercises develop a thorough understanding of the structure of graphs and the techniques used to analyze problems. The first seven chapters form the basic course, with advanced material in Chapter 8.

FEATURES
- NEW - Appendix of Mathematical Background—Appendix A presents background material on logical statements, basic set theory, equivalence relations, and elementary counting.
- Makes review material easily accessible for beginning students (Chapter 1 still discusses central proof techniques).
- NEW - Expanded and improved selection of exercises—Exercises have been added, especially easier exercises, and many exercises have been further clarified.
- Enlarged selection of easier exercises provides greater encouragement for beginning students and makes the material useful for a broader range of students.
- NEW - Reorganization of material. Some material has been reorganized to provide a smoother development and clearer focus on essential material with optional material clearly designated or removed.
- Facilitates more efficient learning by aiding instructors in designing courses and students in seeing what is important.
- NEW - Definitions more prominent. Terms being defined are in bold type and most important definitions occur in numbered items.
- Makes definitions easier for students to find.
- NEW - Hints for selected exercises—More hints have been added as Appendix C.
- Allows students to learn at their own pace; weaker students have more opportunity to be successful; stronger students have more opportunity to be stimulated.

- Logical organization—Concepts are introduced as needed, achieving a gradual increase in intellectual difficulty.
- Allows students to find fundamental results in the early sections of chapters and to master elementary concepts in preparation for later applications.
- Additional topics—Final chapter is a bridge to advanced topics.
- Provides supplementary reading for good students and flexibility in advanced courses.
- Over 400 illustrations.
- Allows students to check their understanding of definitions and of steps in proofs.
- Over 1200 exercises—Ranging from relatively straightforward applications of ideas in the text to subtle problems requiring some ingenuity.
- Helps students to understand the ideas of the course and to improve their presentation of coherent arguments.
- Graduation of exercises—Denotes easier exercises by (-), harder by (+), and particularly valuable or instinctive exercises by (!).
- Aids instructor in selecting appropriate exercises and students in practicing for tests.

CONTENTS

ISBN: 9789332521391

Discrete Mathematical Structures

✎ **U.S Gupta**

📄 **576** | © **2014**
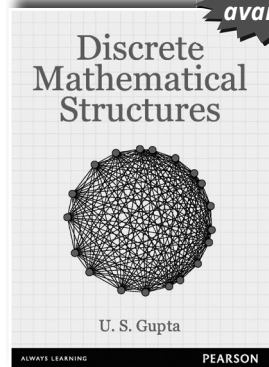
ABOUT THE BOOK
Discrete Mathematical Structures provides comprehensive, reasonably rigorous and simple explanation of the concepts with the help of numerous applications from computer science and engineering.

Every chapter is equipped with a good number of solved examples that elucidates the definitions and theorems discussed. Chapter-end exercises are graded, with the easier ones in the beginning and then the complex ones, to help students for easy solving.

FEATURES
- Over 250 unsolved questions
- Around 400 solved examples

CONTENTS
1. Set Theory
2. Relations and Digraphs
3. Functions
4. Mathematical Logic and Methods of Proofs
5. Combinatorics
6. Recurrence Relations and Generating Functions
7. Algebraic Structures
8. Ordered Sets and Lattices
9. Boolean Algebra
10. Graph Theory
11. Trees
12. Vector Spaces

ABOUT THE AUTHOR
Uma Shanker Gupta joined the department of mathematics, the University of Roorkee (presently IIT-Roorkee), in 1967, after teaching for five years at Ewing Christian Degree College, Allahabad. He was awarded PhD (Mathematics) by the University of Roorkee in 1971. He has been a reviewer of many International journals like Journal of Applied Mechanics, Journal of Sound and Vibration to name a few. He became EMERITUS FELLOW in 2004 and held this position till 2006.

A History of Mathematics, 3/e
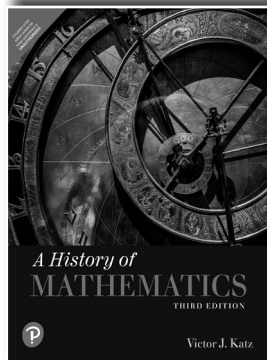
Victor J. Katz

📄 **992** | © **2019**

Web Supplements

ABOUT THE BOOK

A History of Mathematics, 3rd Edition, provides students with a solid background in the history of mathematics and focuses on the most important topics for today's elementary, high school, and college curricula. Students will gain a deeper understanding of mathematical concepts in their historical context, and future teachers will find this book a valuable resource in developing lesson plans based on the history of each topic.

FEATURES

- **The flexible presentation** organizes the book by chronological period and then by topic.
- **Discussions of the important textbooks** of major time periods show students how topics were historically treated, allowing students to draw connections to modern approaches.
- **A global perspective** integrates non-Western coverage, including contributions from Chinese, Indian, and Islamic mathematicians. An additional chapter discusses the mathematical achievements of early Africa, America, and Asia.
- **Chapter openers** include a vignette and quotation to add motivation and human interest.
- **Focus essays** are boxed features that are set apart from the main narrative of the text for easy reference.
- **A chronology of major mathematicians** at the end of every chapter gives an overview of important individuals and their contribution to the field of mathematics.
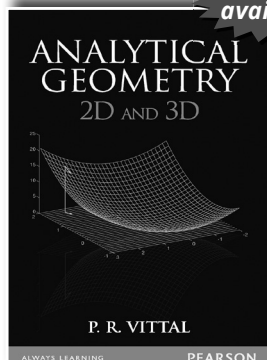
CONTENTS

ABOUT THE AUTHOR

Victor J. Katz received his PhD in mathematics from Brandeis University in 1968 and has been Professor of Mathematics at the University of the District of Columbia for many years.

ISBN: 9788131773604

Analytical Geometry: 2D and 3D

P R Vittal

📄 **752** | © **2013**

ABOUT THE BOOK

Designed to meet the requirements of UG students, the book deals with the theoretical as well as the practical aspects of the subject. Equal emphasis has been given to both 2D as well as 3D geometry. The book follows a systematic approach with adequate examples for better understanding of the concepts.

CONTENTS

PART I
1. Coordinate Geometry
2. Straight Line
3. Pair of straight lines
4. Circle
5. System of circles
6. Parabola
7. Ellipse
8. Hyperbola
9. Polar co-ordinates
10. Tracing of Curves

PART II
11. Three dimension
12. Plane
13. Straight line
14. Sphere
15. Cone
16. Cylinder

ABOUT THE AUTHOR

P. R. Vittal was a postgraduate professor of mathematics at Ramakrishna Mission Vivekananda College, Chennai, from where he retired as principal in 1996. His assignments as visiting professor took him to Western Carolina University, USA. Currently, Vittal is a visiting professor at the Department of Statistics, University of Madras; The Institute of Chartered Accountants of India, Chennai; the Institute for Technology and Management, Chennai; and National Management School, Chennai, besides being a research guide for management science at BITS Pilani.

Numerical Methods

ISBN: 9788131732212

Web Supplements

Babu Ram

📄 **520** | © **2010**
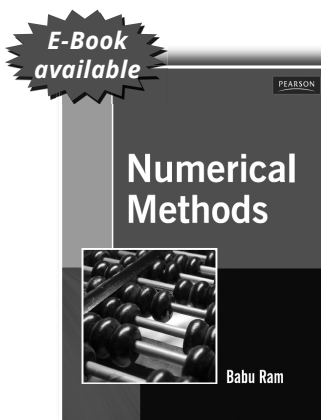
ABOUT THE BOOK

Numerical Methods is a mathematical tool used by engineers and mathematicians to do scientific calculations. It is used to find solutions to applied problems where ordinary analytical methods fail. This book is intended to serve for the needs of courses in *Numerical Methods* at the Bachelors' and Masters' levels at various universities.

FEATURES

- Concise and easy-to-understand treatment of concepts
- Most of the numerical methods have been described technically along with the convergence and error propagation
- 260 solved examples
- 160 practice problems
- Error analysis using various methods
- C programs of important numerical methods

CONTENTS

1. Preliminaries
2. Non-Linear Equations
3. Linear Systems of Equations
4. Eigenvalues and Eigenvectors
5. Finite Differences and Interpolation
6. Curve Fitting
7. Numerical Differentiation
8. Numerical Quadrature
9. Difference Equations
10. Ordinary Differential Equations
11. Partial Differential Equations
12. Elements of C Language

ABOUT THE AUTHOR

Babu Ram received his Ph.D. degree in Mathematics in 1973 from Kurukshetra University, Kurukshetra, India. He retired from Maharshi Dayanand University, Rohtak in 2006 as Professor of Mathematics and Dean, Faculty of Physical Sciences. Currently, he is Programme Director (MCA) at Manav Rachna International University, Faridabad (Haryana). He has published 42 research papers in Real and Functional Analysis in international journals of repute.

Numerical Analysis

Web Supplements

Sivaramakrishna Das | **Vijayakumari**

📄 **768** | © **2014**
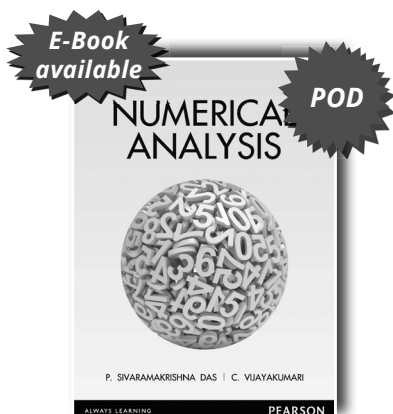
ISBN: 9788131776469

ABOUT THE BOOK

A text book designed exclusively for the undergraduate students. With a complete presentation on theoretical and numerical derivations supported with rich pedagogy for practice. All chapters begin with theoretical presentation emphasizing the practical computation which addresses the accurate approximation. Subsequently, the book provides a detailed explanation on Errors in Numerical Computation,

Algebraic and Transcendental Equations, Solution of Linear System of Equation, Curve Fitting, Initial value problem for ordinary differential equation, Boundary value problems of second order partial differential equation and Solution of difference equation with constant coefficient.

FEATURES
- An exclusive coverage on Boundary value problems of second order partial differential equation and solution of difference equation with constant coefficient
- Over 200 line diagrams
- 400 solved problems
- 250 unsolved problems for practice.

CONTENTS
1. Errors in Numerical Computations
2. Solution of Algebraic and Transcendental Equations
3. Polynomial Interpolation
4. Inverse Interpolation
5. Numerical Differentiation
6. Numerical Integration
7. Curve Fitting
8. Initial value Problems for Ordinary Differential Equations
9. Boundary Value problems in Ordinary and Partial Differential Equation
10. Differential Equations

ABOUT THE AUTHOR(S)
P. Sivaramakrishna Das started his career as Assistant Professor of Mathematics at Ramakrishna Mission Vivekananda College, Chennai, his alma mater, and retired as Professor and Head of the Department of Mathematics from the same college after an illustrious career spanning 36 years. Currently, he is Professor of Mathematics, Department of Science and Humanities, K.C.G. College of Technology, Chennai.

C. Vijayakumari began her career as Assistant Professor of Mathematics at Government Arts College for Women, Thanjavur, and has taught at various government arts and science colleges across Tamil Nadu before retiring as Professor of Mathematics, Queen Mary's College, Chennai, with 40 years of teaching experience behind her.

POD
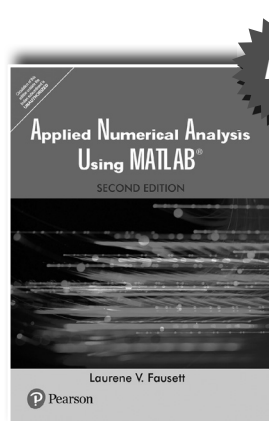
Applied Numerical Analysis Using MATLAB, 2/e

Laurene V. Fausett

📄 **688** | © **2009**

ISBN: 9788131728536

ABOUT THE BOOK
This text is appropriate for undergraduate courses on numerical methods and numerical analysis found in engineering, mathematics & computer science departments. Each chapter uses introductory problems from specific applications. These easy-to-understand problems clarify for the reader the need for a particular mathematical technique. Numerical techniques are explained with an emphasis on why they work.

FEATURES
- Full-page overview for each chapter " Includes two applications to introduce each chapter (except the first introductory chapter)
- End-of-chapter Beyond the Basics or Further Topics Introduce more advanced methods, often including those used by MATLAB and other professionally developed software packages.
- Chapter Wrap-Up " Includes a summary of the formulas for the basic methods presented in the chapter, suggestions for further reading, and several types of exercises.
- Practice the Techniques problems " Present fairly straightforward problems that encourage practice by handor verification of simple MATLAB programs.

CONTENTS
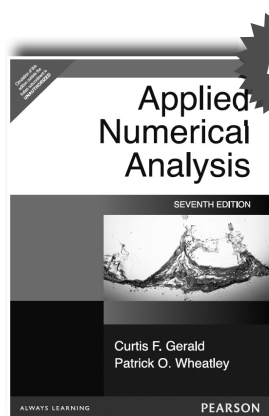
Applied Numerical Analysis, 7/e

✒ **Curtis F. Gerald**

📄 **624** | © **2007**

ABOUT THE BOOK

The seventh edition of this classic text has retained the features that make it popular, while updating its treatment and inclusion of Computer Algebra Systems and Programming Languages. The exercise sets include additional challenging problems and projects which show practical applications of the material. Also, sections which discuss the use of computer algebra systems such as Maple®, Mathematica®, and MATLAB®, facilitate the integration of technology in the course. Furthermore, the text incorporates programming material in both FORTRAN and C. The breadth of topics, such as partial differential equations, systems of nonlinear equations, and matrix algebra, provide comprehensive and flexible, coverage of all aspects of numerical analysis.

FEATURES

- Applied problems and applications emphasize real applications not detailed mathematical theorems
- Computer programs in either Fortran 90 or C are given at the conclusion of each chapter.
- Treats Linear systems before non-linear systems.
- The pace of topic presentation is appropriate for the audience.
- Excellent treatment of parallel processing.

CONTENTS

1. Solving Nonlinear Equations.
2. Solving Sets of Equations.
3. Interpolation and Curve Fitting.
4. Approximation of Functions.
5. Numerical Differentiation and Integration.
6. Numerical Solution of Ordinary Differential Equations.
7. Optimization.
8. Partial Differential Equations.
9. Finite Element Analysis.

Numerical Methods Using MATLAB, 4/e

✒ **John H. Mathews** | **Kurtis K. Fink**

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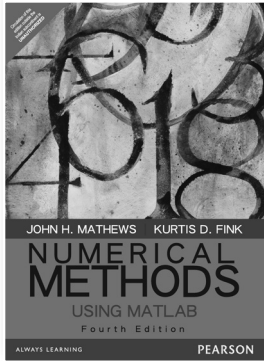
ABOUT THE BOOK
This book provides a fundamental introduction to numerical analysis for undergraduate students in the areas of mathematics, computer science, physical sciences, and engineering. Knowledge of calculus is assumed.

FEATURES
- NEW - Expanded emphasis on analysis of competing methods and issues of error.
- NEW - Rewritten chapter on numerical optimization.
- NEW - New topics for minimization of $z = f(x,y)$ are included.
- NEW - Projects for undergraduate library research experience have been added.
- Explicit use of the software MATLAB is offered.
- Each numerical method is presented in a self-contained format.
- Balance of theory and application.
- A variety of problems to sharpen students skills with extensive problem sets with a wide variety of activities.
- A wealth of tables and graphs which illustrates computer calculations in examples making the resulting numerical approximations easier to interpret.

CONTENTS
1. Preliminaries.
2. The Solution of Nonlinear Equations $f(x) = 0$.
3. The Solution of Linear Systems AX = B.
4. Interpolation and Polynomial Approximation.
5. Curve Fitting.
6. Numerical Differentiation.
7. Numerical Integration.
8. Numerical Optimization.
9. Solution of Differential Equations.
10. Solution of Partial Differential Equations.
11. Eigenvalues and Eigenvectors.

Appendix: An Introduction to MATLAB.
Answers to Selected Exercises.

ABOUT THE AUTHOR(S)
John H. Mathews, *California State University, Fullerton*
Kurtis K. Fink, *Northwest Missouri State University*

Basic Applied Mathematics for the Physical Sciences Based on the syllabus of the University of Delhi, Updated 3/e
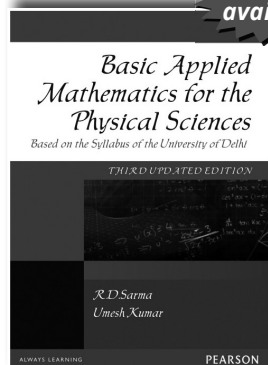
✒ **R. D. Sarma** | **Umesh Kumar**

📄 **440** | © **2012**

ISBN: 9788131787823

ABOUT THE BOOK
Basic Applied Mathematics for the Physical Sciences offers an introductory course in mathematics for the undergraduate students of physical sciences and applied physical sciences in the University of Delhi. Well structured into three parts, this book presents an in-depth study of matrices, calculus and complex numbers. It provides a perfect blend of theoretical principles and numerical problems to help students enhance their understanding of mathematical concepts and their applications. A student-friendly approach and an easy-paced treatment of all relevant topics make this book useful for students of mathematics.

FEATURES
- Completely covers the semester-wise revised syllabus of the University of Delhi
- Includes the University of Delhi's solved question papers for the years 2010-11 and 2011-12
- Mathematical concepts explained using illustrative examples, diagrams and problems from various domains of science
- More than 350 solved examples interspersed in the text
- 700 practice problems
- Statistical, logarithmic and exponential tables provided, making the text completely self-contained

CONTENTS
1. Matrices
2. Vectors in R2 and R3
3. Linear Transformations
4. Eigenvalues and Eigenvectors
5. Sequences
6. Functions and Their Graphs
7. Differential Equations in Mathematical Modelling
8. Successive Differentiation
9. Polynomial Approximation of Functions
10. Functions of Two Variables
11. Geometry of Complex Numbers
12. De Moivre's Theorem

ABOUT THE AUTHOR(S)
R. D. Sarma is an associate professor in the Department of Mathematics at Rajdhani College, New Delhi. He has over 19 years of teaching experience at the undergraduate and postgraduate levels. He has published 28 research papers in various international journals and has worked on several research projects under the UGC and CSIR. His primary areas of interest are fuzzy set theory and topology. He has attended several international conferences and has been involved in guiding students for their Ph.D. degrees .He has also worked as an associate professor in mathematics in the Eritrea Institute of Technology, under the aegis of the Ministry of Education, Eritrea.

Umesh Kumar is an assistant professor in the Department of Mathematics at Rajdhani College, New Delhi. He is an active member of the Mathematical Association of India and a life member of the Indian Mathematical Society and Indian Science Congress Association. His area of research is topology. He was recently awarded 'The Worshipful Company of International Bankers' Prize' for securing the first position in M.Sc. (Financial Mathematics) from King's College, London. Presently, he is deputed as a faculty member in the Cluster Innovation Centre, University of Delhi.
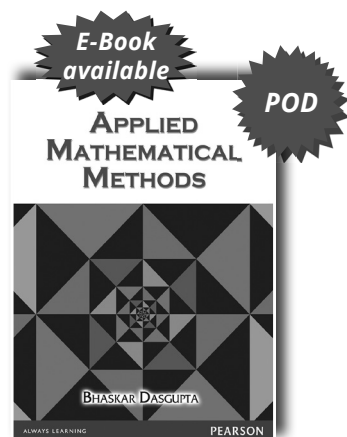
Applied Mathematical Methods

APPLIED MATHEMATICAL METHODS

BHASKAR DASGUPTA

ALWAYS LEARNING   PEARSON

✒ **Bhaskar Dasgupta**

📄 **524** | © **2006**

Web Supplements

ABOUT THE BOOK
This book covers the material vital for research in today's world and can be covered in a regular semester course. It is the consolidation of the efforts of teaching the compulsory first semester post-graduate applied mathematics course at the Department of Mechanical Engineering at IIT Kanpur in two successive years.

CONTENTS
1. Preliminary Background
2. Matrices and Linear Transformations
3. Operational Fundamentals of Linear Algebra
4. Systems of Linear Equations
5. Gauss Elimination Family of Methods
6. Special Systems and Special Methods
7. Numerical Aspects in Linear Systems
8. Eigenvalues and Eigenvectors
9. Diagonalization and Similarity Transformations
10. Jacobi and Givens Rotation Methods
11. Householder Transformation and Tridiagonal Matrices
12. QR Decomposition Method
13. Eigenvalue Problem of General Matrices
14. Singular Value Decomposition
15. Vector Spaces: Fundamental Concepts*
16. Topics in Multivariate Calculus
17. Vector Analysis: Curves and Surfaces
18. Scalar and Vector Fields
19. Polynomial Equations
20. Solution of Nonlinear Equations and Systems
21. Optimization: Introduction
22. Multivariate Optimization
23. Methods of Nonlinear Optimization*
24. Constrained Optimization
25. Linear and Quadratic Programming Problems*
26. Interpolation and Approximation
27. Basic Methods of Numerical Integration
28. Advanced Topics in Numerical Integration*
29. Numerical Solution of Ordinary Differential Equations
30. ODE Solutions: Advanced Issues
31. Existence and Uniqueness Theory
32. First Order Ordinary Differential Equations
33. Second Order Linear Homogeneous ODE's
34. Second Order Linear Non-Homogeneous ODE's
35. Higher Order Linear ODE's
36. Laplace Transforms
37. ODE Systems

ABOUT THE AUTHOR

Bhaskar Dasgupta is associate professor in the Department of Mechanical Engineering at Indian Institute of Technology Kanpur. He received his doctorate from the Indian Institute of Science, Bangalore, India in 1997. His ever-expanding research interests include topics in robotics such as serial and parallel manipulators, and motion planning methods; as well as nonlinear optimization, domain mapping, geometric modelling and protein docking. In his spare time, he takes a zealous interest in languages, literature, history and philosophy.

E-Book available

FOURTH EDITION

A Friendly Introduction to
NUMBER THEORY

Pearson   JOSEPH H. SILVERMAN
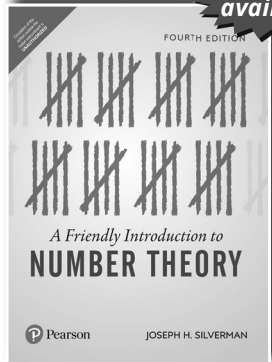
A Friendly Introduction to Number Theory, 4/e

Joseph H Silverman

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Web Supplements

ABOUT THE BOOK

A Friendly Introduction to Number Theory, 4th Edition is designed to introduce students to the overall themes and methodology of mathematics through the detailed study of one particular facet–number theory. Starting with nothing more than basic high school algebra, students are gradually led to the point of actively performing mathematical research while getting a glimpse of current mathematical frontiers. The writing is appropriate for the undergraduate audience and includes many numerical examples, which are analyzed for patterns and used to make conjectures. Emphasis is on the methods used for proving theorems rather than on specific results.

FEATURES

- 50 short chapters provide flexibility and options for instructors and students. A flowchart of chapter dependencies is included in this edition.
- Five basic steps are emphasized throughout the text to help readers develop a robust thought process:
    - Experimentation
    - Pattern recognition
    - Hypothesis formation
    - Hypothesis testing
    - Formal proof
- RSA cryptosystem, elliptic curves, and Fermat's Last Theorem are featured, showing the real-life applications of mathematics.

CONTENTS

1. What Is Number Theory?
2. Pythagorean Triples
3. Pythagorean Triples and the Unit Circle
4. Sums of Higher Powers and Fermat's Last Theorem
5. Divisibility and the Greatest Common Divisor
6. Linear Equations and the Greatest Common Divisor
7. Factorization and the Fundamental Theorem of Arithmetic
8. Congruences
9. Congruences, Powers, and Fermat's Little Theorem
10. Congruences, Powers, and Euler's Formula
11. Euler's Phi Function and the Chinese Remainder Theorem
12. Prime Numbers
13. Counting Primes
14. Mersenne Primes
15. Mersenne Primes and Perfect Numbers
16. Powers Modulo m and Successive Squaring
17. Computing k^{th} Roots Modulo m
18. Powers, Roots, and "Unbreakable" Codes
19. Primality Testing and Carmichael Numbers
20. Squares Modulo p
21. Is -1 a Square Modulo p? Is 2?
22. Quadratic Reciprocity
23. Proof of Quadratic Reciprocity
24. Which Primes Are Sums of Two Squares?

ABOUT THE AUTHOR

Joseph H. Silverman is a Professor of Mathematics at Brown University. He received his Sc.B. at Brown and his Ph.D. at Harvard, after which he held positions at MIT and Boston University before joining the Brown faculty in 1988.

NEW

E-Book available

Probability and Statistics for Engineers and Scientists, Updated 9/e

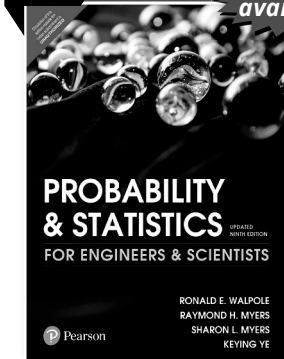Ronald E. Walpole | Raymond H. Myers | Sharon L. Myers | Keying Ye

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Web Supplements

ISBN: 9788119896646

ABOUT THE BOOK

For junior/senior undergraduates taking probability and statistics as applied to engineering, science, or computer science. This classic text provides a rigorous introduction to basic probability theory and statistical inference, with a unique balance between theory and methodology. Interesting, relevant applications use real data from actual studies, showing how the concepts and methods can be used to solve problems in the field. This revision focuses on improved clarity and deeper understanding.

FEATURES

- Real-life applications of the Poisson, binomial, and hypergeometric distributions generate student interest using topics such as flaws in manufactured copper wire, highway potholes, hospital patient traffic, airport luggage screening, and homeland security.
- Case studies provide deeper insight into the practicality of the concepts.
- Statistical software coverage in case studies includes SAS® and MINITAB®, with screenshots and graphics as appropriate.
- "Pot Holes" comments remind students of the bigger picture and how each chapter fits into that picture. These notes also discuss limitations of specific procedures and help students avoid pitfalls in misusing statistics.
- Class projects in several chapters provide the opportunity for students to gather their own experimental data and draw inferences from that data. These projects illustrate the meaning of a concept or provide empirical understanding of important statistical results and are suitable for either group or individual work.
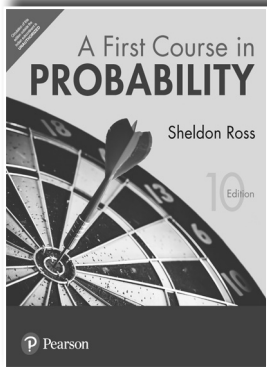
CONTENTS

ABOUT THE AUTHOR(S)

Ronald E. Walpole, Roanoke College
Raymond H. Myers, Virginia Tech
Sharon L. Myers, Radford University
Keying Ye, University of Texas at San Antonio

A First Course in Probability, 10/e

✒ **Sheldon M. Ross**

📄 **524** | © **2022**

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ABOUT THE BOOK

A First Course in Probability offers an elementary introduction to the theory of probability for students in mathematics, statistics, engineering, and the sciences. Through clear and intuitive explanations, it attempts to present not only the mathematics of probability theory, but also the many diverse possible applications of this subject through numerous examples. The 10th Edition includes many new and updated problems, exercises, and text material chosen both for inherent interest and for use in building student intuition about probability.

FEATURES

- Analysis is unique to the text and elegantly designed. Examples include the knockout tournament and multiple players gambling ruin problem, along with results concerning the sum of uniform and the sum of geometric random variables.
- Intuitive explanations are supported with an abundance of examples to give readers a thorough introduction to both the theory and applications of probability.
- Three sets of exercises are given at the end of each chapter: Problems, Theoretical Exercises, and Self-Test Problems and Exercises.
- New - Streamlined exposition focuses on clarity and deeper understanding.
- Many new and updated problems and exercises.
- New - Examples such as Example 4n of Chapter 3, which deals with computing NCAA basketball tournament win probabilities, and Example 5b of Chapter 4, which introduces the friendship paradox.
- New - Material on the Pareto distribution, on Poisson limit results, and on the Lorenz curve.

CONTENTS

1. Combinatorial Analysis
2. Axioms of Probability
3. Conditional Probability and Independence
4. Random Variables
5. Continuous Random Variables
6. Jointly Distributed Random Variables
7. Properties of Expectation
8. Limit Theorems 394
9. Additional Topics in Probability
10. Simulation

ABOUT THE AUTHOR

Sheldon M. Ross is a professor in the Department of Industrial Engineering and Operations Research at the University of Southern California. He received his Ph.D. in statistics at Stanford University in 1968. He has published many technical articles and textbooks in the areas of statistics and applied probability. Among his texts are A First Course in Probability, Introduction to Probability Models, Stochastic Processes, and Introductory Statistics. Professor Ross is the founding and continuing editor of the journal Probability in the Engineering and Informational Sciences, the Advisory Editor for International Journal of Quality Technology and Quantitative Management, and an Editorial Board Member of the Journal of Bond Trading and Management. He is a Fellow of the Institute of Mathematical Statistics and a recipient of the Humboldt US Senior Scientist Award.

Probability and Statistical Inference, 10/e
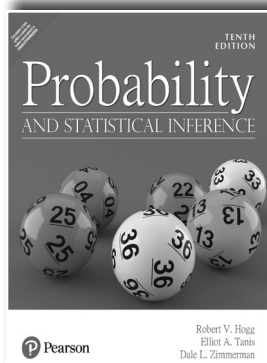
Robert V. Hogg | **Elliot Tanis** | **Dale Zim**

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ABOUT THE BOOK

Advances in computing technology – particularly in science and business – have increased the need for more statistical scientists to examine the huge amount of data being collected. Written by veteran statisticians, Probability and Statistical Inference, 10th Edition emphasizes the existence of variation in almost every process, and how the study of probability and statistics helps us understand this variation. This applied introduction to probability and statistics reinforces basic mathematical concepts with numerous real-world examples and applications to illustrate the relevance of key concepts. It is designed for a two-semester course, but it can be adapted for a one-semester course. A good calculus background is needed, but no previous study of probability or statistics is required.

FEATURES

- Approximately 25 new examples and more than 75 new exercises have been added.
- A new section (Section 2.5) on the hypergeometric distribution is provided, adding to material previously scattered throughout the first and second chapters.
- Discussion of new topics includes the index of skewness and the laws of total probability for expectations and the variance.
- New material has been added on the topics of percentile matching and the invariance of maximum likelihood estimation.
- A new section on hypothesis testing for variances also includes confidence intervals for a variance and for the ratio of two variances.

CONTENTS

ABOUT THE AUTHOR

Robert V. Hogg (deceased), Professor Emeritus of Statistics at the University of Iowa since 2001, received his B.A. in mathematics at the University of Illinois and his M.S. and Ph.D. degrees in mathematics, specializing in actuarial sciences and statistics, from the University of Iowa. Known for his gift of humor and his passion for teaching, Hogg had far-reaching influence in the field of statistics. Throughout his career, Hogg played a major role in defining statistics as a unique academic field, and he almost literally ""wrote the book"" on the subject. He wrote more than 70 research articles and co-authored four books, including Introduction of Mathematical Statistics, 6th Edition with J. W. McKean and A.T. Craig; Applied Statistics for Engineers and Physical Scientists, 3rd Edition with J. Ledolter; and A Brief Course in Mathematical Statistics, 1st Edition with E.A. Tanis. His texts have become classroom standards used by hundreds of thousands of students.Elliot Tanis, Professor Emeritus of Mathematics at Hope College, received his M.S. and Ph.D. degrees from the University of Iowa. Tanis is the co-author of A Brief Course in Mathematical Statistics with R. Hogg and Probability and Statistics: Explorations with MAPLE, 2nd Edition with Z. Karian. He has authored over 30 publications on statistics and is a past chairman and governor of the Michigan MAA, which presented him with both its Distinguished Teaching and Distinguished Service Awards. He taught at Hope for 35 years and in 1989 received the HOPE Award (Hope's Outstanding Professor Educator) for his excellence in teaching. In addition to his academic interests, Dr. Tanis is also an avid tennis player and devoted Hope sports fan. Dale Zimmerman is the Robert V. Hogg Professor in the Department of Statistics and Actuarial Science at the University of Iowa.

Introduction to Mathematical Statistics, 8/e
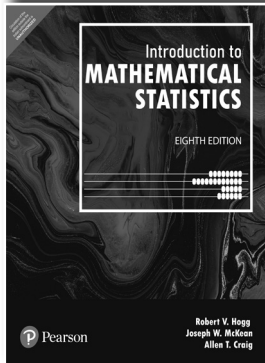
Robert V. Hogg | **Allen T. Craig** | **Joseph W. McKean**

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Web Supplements

ABOUT THE BOOK

Introduction to Mathematical Statistics by Hogg, McKean, and Craig enhances student comprehension and retention with numerous, illustrative examples and exercises. Classical statistical inference procedures in estimation and testing are explored extensively, and the text's flexible organization makes it ideal for a range of mathematical statistics courses. Substantial changes to the 8th Edition – many based on user feedback - help students appreciate the connection between statistical theory and statistical practice, while other changes enhance the development

FEATURES

- Many additional real data sets to illustrate statistical methods or compare methods.
- Expanded use of the statistical software R, a powerful statistical language which is free and can run on all three main platforms.
- Expanded discussion of iterated integrals, with added figures to clarify discussion.
- Several important topics have been added, including a subsection on the bivariate normal distribution, Tukey's multiple comparison procedure and confidence intervals for the correlation coefficients.
- Discussion on standard errors for estimates obtained by bootstrapping the sample is now included.

CONTENTS

1. Probability and Distributions
2. Multivariate Distributions
3. Some Special Distributions
4. Some Elementary Statistical Inferences
5. Consistency and Limiting Distributions
6. Maximum Likelihood Methods
7. Sufficiency
8. Optimal Tests of Hypotheses
9. Inferences About Normal Linear Models
10. Nonparametric and Robust Statistics
11. Bayesian Statistics

Appendices:
- A. Mathematical Comments
- B. R Primer
- C. Lists of Common Distributions
- D. Table of Distributions
- E. References
- F. Answers to Selected Exercises

ABOUT THE AUTHOR(S)

Robert V. Hogg, University of Iowa

Joeseph McKean, Allen T. Craig, Late, Professor of Statistics, University of Iowa

ISBN: 9789353945237

Miller and Freund's Probability and Statistics for Engineering, 9/e

Richard A. Johnson

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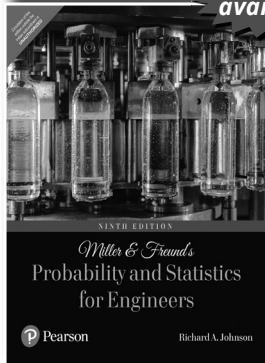
ABOUT THE BOOK

Miller & Freund's Probability and Statistics for Engineers is rich in exercises and examples, and explores both elementary probability and basic statistics, with an emphasis on engineering and science applications. Much of the data has been collected from the author's own consulting experience and from discussions with scientists and engineers about the use of statistics in their fields. In later chapters, the text emphasizes designed experiments, especially two-level factorial design. The Ninth Edition includes several new datasets and examples showing application of statistics in scientific investigations, familiarizing students with the latest methods, and readying them to become real-world engineers and scientists.

FEATURES

- Many new examples on important current engineering and scientific data further strengthen the text's orientation towards an applications-based introduction to statistics
- Added graphs illustrating P-values appear in several examples along with an interpretation
- More details about using R commands make it easy for students to check calculations on their own laptop or tablet, while reading an example.

- Key formulas are stressed and calculation formulas are downplayed. Computation formulas are set in the context of an application which only requires all, or mostly all, integer arithmetic, and now appear only at the end of sections. Students can then check their results with their choice of software.
- All examples are now numbered within each chapter.
- New data-based exercises feature real applications to help stimulate interest and strengthen a student's appreciation of the role of statistics in engineering applications.

CONTENTS

ABOUT THE AUTHOR

Richard A. Johnson University of Wisconsin–Madison

FOURTH EDITION
PROBABILITY AND STATISTICS
Morris DeGroot | Mark Schervish

ALWAYS LEARNING   PEARSON
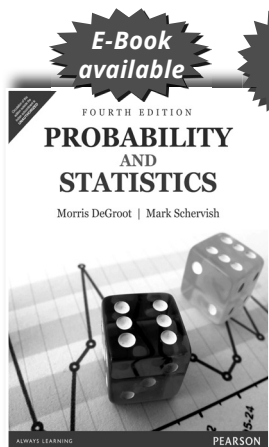
ISBN: 9789332573871

Probability and Statistics, 4/e

✒ **Morris H. DeGroot** | **Mark J. Schervish**

📄 **2016** | © **2016**

ABOUT THE BOOK
The revision of this well-respected text presents a balanced approach of the classical and Bayesian methods and now includes a chapter on simulation (including Markov chain Monte Carlo and the Bootstrap), coverage of residual analysis in linear models, and many examples using real data.

Probability & Statistics, Fourth Edition, was written for a one- or two-semester probability and statistics course. This course is offered primarily at four-year institutions and taken mostly by sophomore and junior level students majoring in mathematics or statistics. Calculus is a prerequisite, and a familiarity with the concepts and elementary properties of vectors and matrices is a plus.

FEATURES
- Brief introductions in each technical section give readers a hint about what they are going to encounter, while summaries list the most important ideas.
- In addition to examples using current data, some elementary concepts of probability are illustrated by famous examples such as the birthday problem, the tennis tournament problem, the matching problem, and the collector's problem.
- Special features include sections on Markov chains, the gambler's ruin problem, and utility and preferences among gamblers. These topics are presented in an elementary fashion and can be omitted without loss of continuity.
- Optional sections of the book are indicated by an asterisk in the Table of Contents.
- Chapters 1—5 are devoted to probability and can serve as the text for a one-semester course on probability. Independence is now introduced after conditional probability.
- Chapters 6—10 are devoted to statistical inference. Both classical and Bayesian statistical methods are developed in an integrated presentation which will be useful to students when applying the concepts to the real world.

CONTENTS
1. Introduction to Probability
2. Conditional Probability
3. Random Variables and Distributions
4. Expectation
5. Special Distributions
6. Large Random Samples
7. Estimation
8. Sampling Distributions of Estimators
9. Testing Hypotheses
10. Categorical Data and Nonparametric Methods
11. Linear Statistical Models

John E. Freund's Mathematical Statistics with Applications, 8/e
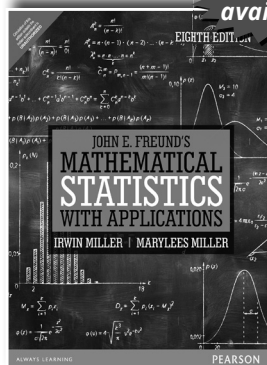
Irwin Miller | **Marylees Miller**

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ABOUT THE BOOK

John E. Freund's *Mathematical Statistics with Applications*, Eighth Edition, provides a calculus-based introduction to the theory and application of statistics, based on comprehensive coverage that reflects the latest in statistical thinking, the teaching of statistics, and current practices.

This text is appropriate for a two-semester or three-quarter calculus-based course in Introduction to Mathematical Statistics. It can also be used for a single-semester course emphasizing probability, probability distributions and densities, sampling, and classical statistical inference

FEATURES

- "The Theory in Practice" sections at the end of every chapter give students the chance to apply the methods they've learned.
- More than 1,200 exercises offer a wide variety to choose from in creating assignments, tests, and class work. Many of these exercises offer the opportunity to use technology so that students can understand the role of computers in factoring and analyzing statistical data.
- Comprehensive coverage of statistical theories students have appreciated for generations.
- Comprehensive appendices summarize the properties of the special probability distributions and density functions, making this text an invaluable reference.

CONTENTS

Probability and Statistics

✒ **E. Rukmangadachari**

📄 **258** | © **2012**
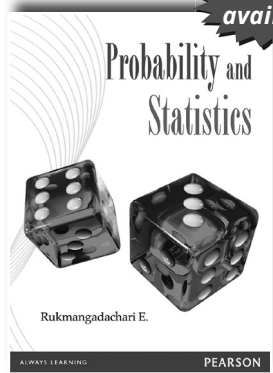
ABOUT THE BOOK

This book is designed for engineering students studying the core paper on probability and statistics during their second or third years. It includes detailed explanation of theory with numerous examples and exercises, as well as relevant references to engineering applications. Each chapter also has numerous objective type questions, and answers and hints are provided for all the exercise problems and objective type questions.

ISBN: 9788131761366

FEATURES

- Detailed examination of special probability distributions
- A separate chapter on estimation theory
- Detailed examination of regression and correlation analysis
- A separate chapter on queuing theory

CONTENTS

1. Probability
2. Probability Distribution
3. Special Distribution
4. Sampling Distributions
5. Estimation Theory
6. Inferences Concerning Means andProportions
7. Tests of Significance
8. Curve Fitting: Regression andCorrelation Analysis
9. Queueing Theory

ABOUT THE AUTHOR(S)

E Rukmangadachari is former head of Computer Science and Engineering as well as Humanities and Sciences at Malla Reddy Engineering College, Secunderabad. He is an MA from Osmania University, and an M.PHIL. and Ph.D. degree holder from Sri Venkateswara University, Thirupathi.

An Introduction to Analysis, 4/e
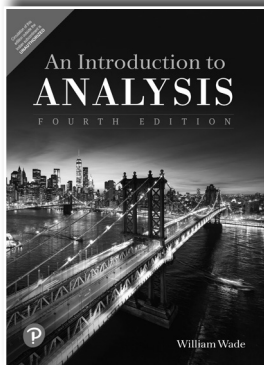
William Wade

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ABOUT THE BOOK

This text prepares students for future courses that use analytic ideas, such as real and complex analysis, partial and ordinary differential equations, numerical analysis, fluid mechanics, and differential geometry. The book is designed to challenge advanced students while encouraging and helping weaker students. Offering readability, practicality and flexibility, Wade presents fundamental theorems and ideas from a practical viewpoint, showing students the motivation behind the mathematics and enabling them to construct their own proofs.

FEATURES

- The **practical focus** explains assumptions so that students learn the motivation behind the mathematics and are able to construct their own proofs.
- **Theoretical exercises** of medium difficulty have been added throughout the book.
- **New True/False questions** in the first six chapters confront common misconceptions that students sometimes acquire at this level.
- **Early introduction of the fundamental goals of analysis** refers and examines how a limit operation interacts with algebraic operation.
- **Separate coverage of topology and analysis** presents purely computational material first, followed by topological material in alternate chapters.
- **More than 200 worked examples and 600 exercises** encourage students to test comprehension of concepts, while using techniques in other contexts.

CONTENTS

1. The Real Number System
2. Sequences in R
3. Continuity on R
4. Differentiability on R
5. Integrability on R
6. Infinite Series of Real Numbers
7. Infinite Series of Functions
8. Euclidean Spaces
9. Convergence in Rn
10. Metric Spaces
11. Differentiability on Rn
12. Integration on Rn
13. Fundamental Theorems of Vector Calculus
14. Fourier Series

ABOUT THE AUTHOR

William Wade received his PhD in harmonic analysis from the University of California—Riverside. He has been a professor of the Department of Mathematics at the University of Tennessee for more than forty years. During that time, he has received multiple awards including two Fulbright Scholarships, the Chancellor's Award for Research and Creative Achievements, the Dean's Award for Extraordinary Service, and the National Alumni Association Outstanding Teaching Award.

Real Analysis, 4/e

✒ **Halsey Royden** | **Patrick Fitzpatrick**

📄 **544** | © **2015**
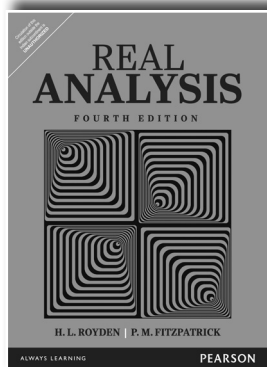
ABOUT THE BOOK

Real Analysis, Fourth Edition, covers the basic material that every graduate student should know in the classical theory of functions of a real variable, measure and integration theory, and some of the more important and elementary topics in general topology and normed linear space theory. This text assumes a general background in undergraduate mathematics and familiarity with the material covered in an undergraduate course on the fundamental concepts of analysis. Patrick Fitzpatrick of the University of Maryland—College Park spearheaded this revision of Halsey Royden's classic text

FEATURES

- Independent, modular chapters give instructors the freedom to arrange the material into a course according that suits their needs. A chart in the text gives the essential dependencies.

- Content is divided into three parts:
    - Part 1: Classical theory of functions, including the classical Banach spaces
    - Part 2: General topology and the theory of general Banach spaces
    - Part 3: Abstract treatment of measure and integration

- Throughout the text, an understanding of the linkages between the three parts is fostered. The expanded collection of problems range from those that confirm understanding of basic results and ideas to those that are quite chal¬lenging; many problems foreshadow future developments.

CONTENTS

Part I: Lebesgue Integration For Functions Of A Single Real Variable

1. The Real Numbers: Sets, Sequences and Functions
2. Lebesgue Measure
3. Lebesgue Measurable Functions
4. Lebesgue Integration
5. Lebesgue Integration: Further Topics
6. Differentiation and Integration
7. The Spaces: Completeness and Approximation
8. The Spaces: Duality and Weak Convergence

Part II: Abstract Spaces: Metric, Topological, And Hilbert

9. Metric Spaces: General Properties
10. Metric Spaces: Three Fundamental Theorems
11. Topological Spaces: General Properties
12. Topological Spaces: Three Fundamental Theorems
13. Continuous Linear Operators Between Banach Spaces
14. Duality for Normed Linear Spaces
15. Compactness Regained: The Weak Topology
16. Continuous Linear Operators on Hilbert Spaces

Part III: Measure And Integration: General Theory

17. General Measure Spaces: Their Properties and Construction
18. Integration Over General Measure Spaces
19. General Spaces: Completeness, Duality and Weak Convergence
20. The Construction of Particular Measures
21. Measure and Topology
22. Invariant Measures
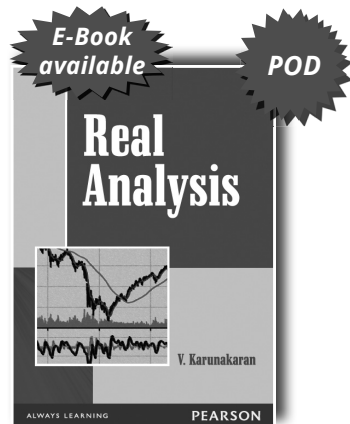
Real Analysis

Real Analysis

V. Karunakaran

V. Karunakaran

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Web Supplements

ISBN: 9788131757987

ABOUT THE BOOK
This text book is designed for an undergraduate course on mathematics. It covers the basic material that every graduate student should know in the classical theory of functions of real variables, measures, limits and continuity. This text book offers readability, practicality and flexibility. It presents fundamental theorems and ideas from a practical viewpoint, showing students the motivation behind mathematics and enabling them to construct their own proofs.

FEATURES
- Comprehensive coverage of sequence and series
- Detailed coverage of topics like measure theory, set theory, limits and continuity
- The theory is well explained, with an equal number of theorems and examples for all topics, including Lp spaces, real number system, measure theory and sequence and series
- A very flexible presentation with a uniform writing style and notation, covering the material in small sections, which allows instructors and students to adapt this book to their syllabus

CONTENTS
1. Basic Properties of the Real number system
2. Some Finer Aspects of Set Theory
3. Sequences and Series
4. Topological aspects of the real line
5. Limits and Continuity
6. Differentiation
7. Functions of Bounded variation
8. Riemann Integration
9. Sequences and series of functions
10. Power series and special functions
11. Fourier Series
12. Real-valued Functions of two real variables
13. Lebesgue Measure and Integration
14. Lp – Spaces

ABOUT THE AUTHOR
V. Karunakaran has 35 years of research experience specializing in real, complex and functional analysis. He was a life member of the Indian Mathematical Society, Association of Mathematics Teachers of India, a fellow of the Forum D'Analystes, Chennai, and a regular reviewer for Zentralblatt für Mathematik.
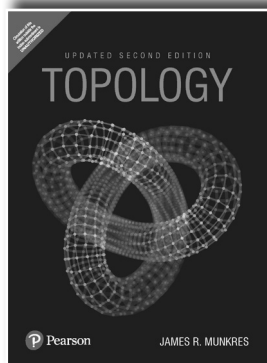
Topology, Updated 2/e

✒ **James R. Munkres**

📄 **556** | © **2021**

ABOUT THE BOOK

This text is designed to provide instructors with a convenient single text resource for bridging between general and algebraic topology courses. Two separate, distinct sections (one on general, point set topology, the other on algebraic topology) are each suitable for a one-semester course and are based around the same set of basic, core topics. Optional, independent topics and applications can be studied and developed in depth depending on course needs and preferences.

ISBN: 9789353432775

FEATURES

- New! Greatly expanded, full-semester coverage of algebraic topology—Extensive treatment of the fundamental group and covering spaces. What follows is a wealth of applications—to the topology of the plane (including the Jordan curve theorem), to the classification of compact surfaces, and to the classification of covering spaces. A final chapter provides an application to group theory itself.
- Follows the present-day trend in the teaching of topology which explores the subject much more extensively with one semester devoted to general topology and a second to algebraic topology.
- Advanced topics—Such as metrization and imbedding theorems, function spaces, and dimension theory are covered after connectedness and compactness.
- Order of topics proceeds naturally from the familiar to the unfamiliar—Begins with the familiar set theory, moves on to a thorough and careful treatment of topological spaces, then explores connectedness and compactness (with their many ties to calculus and analysis), and then branches out to the new and different topics mentioned above.
- Many examples and figures—Exploits six basic counterexamples repeatedly.
- Exercises—Varied in difficulty from the routine to the challenging.

CONTENTS

I. General Topology.

1. Set Theory and Logic.
2. Topological Spaces and Continuous Functions.
3. Connectedness and Compactness.
4. Countability and Separation Axioms.
5. The Tychonoff Theorem.
6. Metrization Theorems and Paracompactness.
7. Complete Metric Spaces and Function Spaces.
8. Baire Spaces and Dimension Theory.

II. Algebraic Topology.

9. The Fundamental Group.
10. Separation Theorems in the Plane.
11. The Seifert-van Kampen Theorem.
12. Classification of Surfaces.
13. Classification of Covering Spaces.
14. Applications to Group Theory.

ABOUT THE AUTHOR

James Raymond Munkres is a Professor Emeritus of mathematics at MIT and the author of several texts in the area of topology, including Topology, Analysis on Manifolds, Elements of Algebraic Topology, and Elementary Differential Topology.

ISBN: 9788131726921

Introduction to Topology
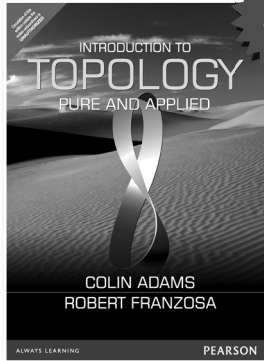
✒ **Colin Adams** | **Robert Franzosa**

📄 **512** | © **2009**

ABOUT THE BOOK
This book introduces topology as an important and fascinating mathematics discipline. Students learn first the basics of point-set topology, which is enhanced by the real-world application of these concepts to science, economics, and engineering as well as other areas of mathematics. The second half of the book focuses on topics like knots, robotics, and graphs. The text is written in an accessible way for a range of undergraduates to understand the usefulness and importance of the application of topology to other fields.

FEATURES
- Theoretical and applied approach- the authors focus on the basic concepts of
- Intuitive and accessibly written text
- Rigorous presentation of the mathematics with intuitive descriptions and discussions to increase student understand.
- Examples of real world application keep students engrossed in the material
- Numerous figures allow students to visualize and understand the material presented

CONTENTS
1. Introduction
2. Topological Spaces
3. Interior, Closure, and Boundary
4. Creating New Topological Spaces
5. Continuous Functions and Homeomorphisms
6. Metric Spaces
7. Connectedness
8. Compactness
9. Dynamical Systems and Chaos
10. Homotopy and Degree Theory
11. Fixed Point Theorems and Applications
12. Embeddings
13. Knots
14. Graphs and Topology
15. Manifolds and Cosmology

NEW

E-Book available

MATHEMATICAL MODELLING FOR ENGINEERS AND SCIENTISTS

Pearson | M SAMBASIVA RAO
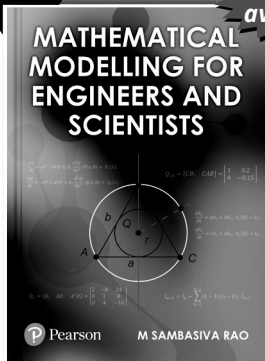
ISBN: 9788119896066

Mathematical Modeling for Engineers and Scientists

M Sambasiva Rao

984 | © 2024

ABOUT THE BOOK

This book offers a comprehensive introduction to mathematical modeling, a vital tool for understanding and solving real-world problems in science, engineering, and applied sciences. Designed for senior undergraduate engineering students and postgraduates in applied mathematics, it guides readers through the process of constructing and utilizing mathematical models. Covering essential mathematical concepts such as differential equations, optimization, and statistics, the book focuses on the formulation and solution of practical problems across diverse fields like engineering, technology, and research. Through clear explanations, practice problems, and solutions, it provides a solid foundation for students and professionals seeking to apply mathematics to real-world challenges.

FEATURES

- Provides a step-by-step approach to constructing and utilizing mathematical models for real-world problems in science and engineering.
- Covers essential mathematical tools like differential equations, optimization, and statistics, necessary for problem-solving in applied sciences.
- Includes practice problems and solutions, helping students develop a deeper understanding of mathematical formulations and their applications.

CONTENTS

Part 1

1. Mathematical Modeling; Basics and Features
2. Elementary Mathematical Models
3. Modeling Through First Order Differential Equations
4. Modeling Through System of First Order Differential Equations
5. Modeling Through Second Order Differential Equations
6. Modeling Through Partial Differential Equations
7. Modeling Through Difference Equations
8. Modeling Through Matrices
9. Modeling Through Graphs
10. Modeling Through Probability
11. Modeling Through Optimization
12. Modeling of Data
13. Solutions to exercises

ABOUT THE AUTHOR

M Sambasiva Rao is Professor of Mathematics at MVGR College of Engineering, Andhra Pradesh, India.

Chapter Zero, 2/e
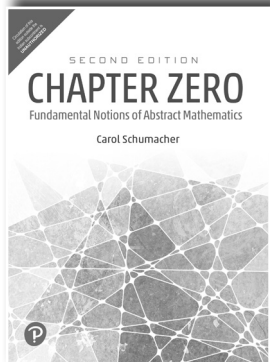
Carol Schumacher

📄 **256** | © **2019**

Web Supplements

ABOUT THE BOOK

Chapter Zero: Fundamental Notions of Abstract Mathematics is designed for the sophomore/junior level Introduction to Advanced Mathematics course. Written in a modified R.L. Moore fashion, it offers a unique approach in which students construct their own understandings. However, while students are called upon to write their own proofs, they are also encouraged to work in groups. The text also offers "proof sketches" and helpful technique tips to help students as they develop their proof writing skills.

FEATURES

- NEW! Coverage of Isomorphisms and Graph Theory.
- Exercise sections have been improved by smoothing out the grade of difficulty.
- Proof Sketches are woven throughout the early chapters of the text, assisting students with proof techniques.
- Logic is used as a tool for analyzing the content of mathematical assertions and for constructing valid mathematical proofs.
- Rigorous axiomatic treatment of set theory is introduced in Appendices A and B.

CONTENTS

1. Logic
2. Sets
3. Induction
4. Relations
5. Functions
6. Elementary Number Theory
7. Cardinality
8. The Real Numbers

ABOUT THE AUTHOR

Carol Schumacher, Professor of Mathematics, Kenyon College.

Mathematical Thinking: Problem–Solving and Proofs, 2/e

John D'Angelo | **Douglas B. West**

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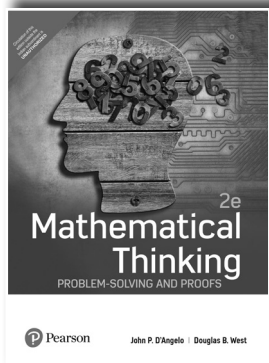
ABOUT THE BOOK

This text is designed to prepare students *thoroughly* in the logical thinking skills necessary to understand and communicate fundamental ideas and proofs in mathematics—skills vital for success throughout the upper class mathematics curriculum. It begins by discussing mathematical language and proof techniques including induction, applies them to easily-understood questions in elementary number theory and counting, and then develops additional techniques of proof via important topics in discrete and continuous mathematics. The stimulating exercises are *acclaimed for their exceptional quality*.

FEATURES

- **Emphasis on understanding rather than manipulation**—Stresses full comprehension rather than rote symbolic manipulation for mastery of proof techniques and mathematical ideas.
- **Engaging examples**—Interesting applications introduce and motivate the underlying mathematics.
- **Hints for selected exercises**—Provides immediate hints for some exercises and hints for others in an appendix.
- **Superior exercise sets**—Offers over 850 exercises ranging from relatively straightforward applications of ideas in the text to subtle problems requiring some ingenuity.
- **Gradation of exercises**—Distinguishes easier exercises by (–), harder by (+), and particularly valuable or instructive exercises by (!).

CONTENTS

ABOUT THE AUTHOR

John D'Angelo Vice President of Facilities Management at Northwestern University.
Douglas West is a professor of graph theory at University of Illinois at Urbana-Champaign.
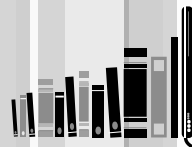
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9788131726921	Adams / Franzosa	Introduction to Topology	1090	51
9789353432751	Artin	Algebra, Updated, 2/e	680	3
9789353433048	Bretscher	Linear Algebra with Applications, 5/e	740	8
9789353433062	Brualdi	Introductory Combinatorics, 5/e	820	19
9789353433093	D'Angelo / West	Mathematical Thinking: Problem-Solving and Proofs, 2/e	660	54
9788131776469	Das / Vijayakumari	Numerical Analysis	960	28
9788131700686	Dasgupta	Applied Mathematical Methods	1320	33
9789357059688	David C. Lay / Steven R. Lay / Judi J. McDonald	Linear Algebra and Its Applications, 5/e	950	4
9789332573871	DeGroot / Schervish	Probability and Statistics, 4/e	2100	44
9789354498756	Dey	Vector Geometry and Elements of Calculus	590	13
9788131728536	Fausett	Applied Numerical Analysis Using MATLAB, 2/e	1290	29
9788131768570	Folland	Advanced Calculus	990	14
9789356067059	Fraleigh / Brand	A First course in abstract algebra, 8/e	1110	5
9789390168132	Friedberg / Insel / Spence	Linear algebra, 5/e	630	6
9788131717400	Gerald	Applied Numerical Analysis, 7/e	1190	30
9789353433017	Goodaire / Parmenter	Discrete Mathematics with Graph Theory, 3/e	730	17
9789332571631	Goode	Differential Equations and Linear Algebra, 3/e	1160	9
9789353433055	Grimaldi	Discrete and Combinatorial Mathematics, 5/e	1070	18
9789332521391	Gupta	Discrete Mathematical Structures	700	25
9789332550070	Hoffman / Kunze	Linear Algebra, 2/e	530	10
9789353946760	Hogg / Craig / McKean	Introduction to Mathematical Statistics, 8/e	1330	42
9789353947781	Hogg / Tanis / Zim	Probability and Statistical Inference, 10/e	920	39
9789332519053	Irwin Miller / Marylees Miller	John E. Freund's Mathematical Statistics with Applications, 8/e	1330	45
9789353945237	Johnson	Miller and Freund's Probability and Statistics for Engineering, 9/e	860	43

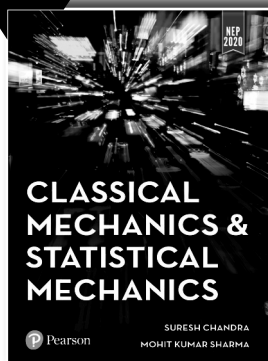| ISBN	Author	Title	Price	Page
9788131757987	Karunakaran	Real Analysis	660	49
9789353433000	Katz	A History of Mathematics, 3/e	1140	26
9789332549593	Kolman / Busby / Ross	Discrete Mathematical Structures, 6/e	860	21
9789353436896	Lial / Hornsby / McGinnis	Introductory Algebra, 11/e	970	8
9789332549357	Mathews / Fink	Numerical Methods Using Matlab, 4/e	920	31
9789332550490	Mott / Kandel	Discrete Mathematics for Computer Scientists, 2/e	990	22
9789353432775	Munkres	Topology, Updated 2/e	650	50
9789332552463	Peterson / Sochacki	Linear Algebra and Differential Equations	920	11
9789353432270	Polking / Boggess / Arnold	Differential Equations, 2/e	830	16
9788131733103	Ram	Discrete Mathematics	960	20
9788131732212	Ram	Numerical Methods	730	28
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9789356064034	Ross	A First course in Probability, 10/e	970	38
9788131790618	Ross / Wright	Discrete Mathematics, 5/e	1320	22
9789332551589	Royden / Fitzpatrick	Real Analysis, 4/e	700	48
9788131761366	Rukmangadachari	Probability and Statistics	430	46
9788131787823	Sarma / Kumar	Basic Applied Mathematics for the Physical Sciences, Based on the syllabus of the University of Delhi, Updated 3/e	580	32
9789353432744	Schumacher	Chapter Zero, 2/e	410	53
9789390394135	Shinde / Mangla / Sharma	Analysis of algorithms	370	2
9789353433079	Silverman	A Friendly Introduction to Number Theory, 4/e	580	35
9789353432997	Spence / Insel / Friedberg	Elementary Linear Algebra, 2/e	790	7
9788177583250	Thomas Jr.	Calculus & Analytical Geometry, 9/e	1150	14
9788131773604	Vittal	Analytical Geometry: 2D and 3D	690	27
9789353432768	Wade	An Introduction to Analysis, 4/e	850	47
9788119896646	Walpole / Myers / Myers / Ye	Probability and Statistics for Engineers and Scientists, Updated 9/e	1040	37
9788119896608	Weir / Hass / Heil / Bogacki	Thomas' Calculus, 15/e	1180	12
9789332549654	West	Introduction to Graph Theory, 2/e	830	23

Physics

CONTENTS

NEW

CLASSICAL MECHANICS & STATISTICAL MECHANICS

ISBN: 9789361598401

Classical Mechanics & Statistical Mechanics

Suresh Chandra | Mohit Kumar Sharma

196 | © **2024**

Web Supplements

ABOUT THE BOOK

As per National Education Policy-2020 Common Minimum Syllabus for all U.P. State Universities/ Colleges. This textbook is designed according to the NEP-2020 syllabus for the Classical Mechanics and Statistical Mechanics course. The content is organized systematically, covering a range of essential topics including Constrained Motion, Lagrangian Formalism, Hamiltonian Formalism, Central Force, Macrostate & Microstate, Concept of Ensemble, Distribution Laws, and Applications of Statistical Distribution Laws.

FEATURES

- Student-Friendly Language: Concepts are explained in a clear and accessible manner to facilitate understanding.
- Supportive Exercises: Each topic is complemented by exercises and review questions to reinforce learning.
- Objective Questions: Chapter-wise objective questions are included to aid in revision and self-assessment.

CONTENTS

1. Constrained Motion
2. Lagrangian Formalism
3. Hamiltonian Formalism
4. Central Force
5. Macrostate & Microstate
6. Concept of Ensemble
7. Distribution Laws
8. Applications of Statistical Distribution Laws
   Appendices
   Bibliography
   Index

ABOUT THE AUTHOR

Prof. (Dr.) Suresh Chandra, AvH Fellow (Germany), FRAS (London), FMAS (Pune), President of Physical Sciences section of 108th Indian Science Congress Association, Kolkata (Govt. of India). Currently, Professor of Physics & Deputy Director Amity Center for Astronomy & Astrophysics, Amity Institute of Applied Sciences Amity University, Uttar Pradesh.

Dr. Mohit Kumar Sharma, M.Sc., M.Phil., Ph.D. (Physics), Young Scientist Awardee (ISCA, 2014) National Postdoctoral Fellow, SERB, DST, New Delhi (2017 – 2019).

Advanced Quantum Mechanics

J. J. Sakurai

336 | © 2006

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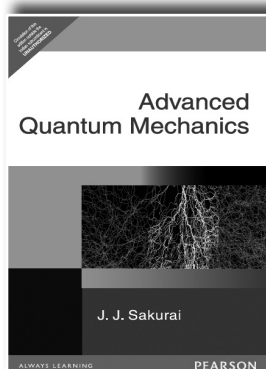
ABOUT THE BOOK

This widely-regarded classic presents the major advances in the fundamentals of quantum physics. No familiarity with relativistic quantum mechanics or quantum field theory is presupposed, but the reader is assumed to be familiar with non-relativistic quantum mechanics, classical thermodynamics and classical mechanics.

CONTENTS

Part I: Classical Fields
1. Particles & Fields a Discrete and Continuous Mechanical Systems
2. Classical Scalar Fields
3. Classical Maxwell Fields
4. Vector Potentials in Quantum Mechanics.

Part II: The Quantum Theory of Radiation
5. Classical Radiation Field
6. Creation, Annihilation, and Number Operators
7. Quantized Radiation Field
8. Emission and Absorption of Photons by Atoms
9. Rayleigh Scattering, Thomson Scattering and the Rama Effect
10. Radiation Damping and Resonance Fluorescence
11. Dispersion Relations and Causality
12. The Self-energy of a Bound Electron; the Lamb Shift

Part III: Relativistic Quantum Mechanics of Spin-1/2 Particles
13. Probability Conservation in Relativistic Quantum Mechanics
14. The Dirac Equation
15. Simple Solutions; Non-Relativistic Approximations; Plane Waves
16. Relativistic Covariance
17. Bilinear Covariants
18. Dirac Operators in the Heisenberg Representation
19. Zitterbewegung and Negative-Energy Solutions
20. Central Force Problems; the Hydrogen Atom
21. Hole Theory and Charge Conjugation
22. Quantization of the Dirac Field
23. Weak Interactions and Parity Nonconservation; the Two-Component Neutrino

Part IV: Covariant Perturbation Theory
24. Natural Units and Dimensions
25. S-Matrix Expansion in the Interaction Representation + First Order Processes; Mott Scattering and Hyperon Decay
26. Two-photon annihilation and Compton Scattering; the Electron Propagator
27. Feynman's Space-Time Approach to the Electron Propagator
28. Moller Scattering and the Photon Propagator; One Meson Exchange Interactions
29. Mass and Charge Renormalization; Radiative Corrections

ABOUT THE AUTHOR

The late **J. J. Sakurai**, noted theorist in particle physics, was born in Tokyo, Japan, in 1933. He received his B.A. from Harvard University in 19565, and his Ph. D. from Cornell University in 1958. Appointed assistant professor at the University of Chicago, he worked there until he became a professor at the University of California, Los Angeles in 1970. Sakurai died in 1982 while he was a visiting professor at CERN in Geneva, Switzerland.

Mechanics, 3/e
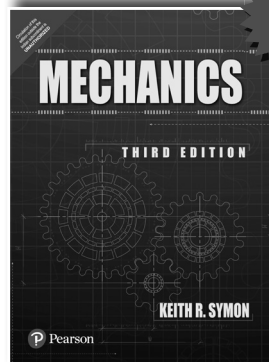
✎ **Keith R. Symon**

📄 **656** | © **2016**

ABOUT THE BOOK
This text is intended as the basis for an intermediate course in mechanics at the undergraduate level. Such a course, as essential preparation for advanced work in physics, has several major objectives. It must develop in the student a thorough understanding of the fundamental principles of mechanics. It should treat in detail certain specific problems of primary importance in physics, for example, the harmonic oscillator and the motion of a particle under a central force

FEATURES
- The treatment throughout the book is intended to emphasize the modern point of view with mathematical rigor
- The examples treated in the text have been worked out so as to integrate as far as possible, the mathematical treatment with physical interpretation
- Two chapters on the theory of relativity has been added in this edition.
- The problems at end of each chapter requires more or less physical ingenuity in addition to an understanding of the text.

CONTENTS
1. Elements of Newtonian Mechanics.
2. Motion of a Particle in One Dimension.
3. Motion of a Particle in Two or Three Dimensions.
4. The Motion of a System of Particles.
5. Rigid Bodies.
6. Rotation about an Axis.
7. Statics.
8. Gravitation.
9. Moving Coordinate Systems.
10. Introduction to the Mechanics of Continuous Media.
11. Lagrange's Equations.
12. Tensor Algebra.
13. Inertia and Stress Tensors.
14. The Rotation of a Rigid Body.
15. Theory of Small Vibrations.
16. Basic Postulates of the Special Theory of Relativity.
17. Relativistic Dynamics.
18. Bibliography.
19. Answers to Odd-Numbered Problems.

ABOUT THE AUTHOR
Keith R. Symon, University of Wisoconsin

Principles of Quantum Mechanics
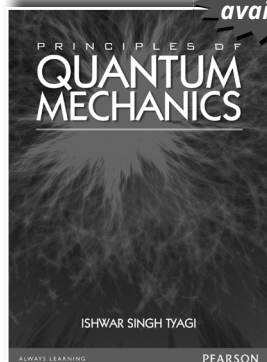
✒ **Ishwar Singh Tyagi**

📄 **584** | © **2013**

ISBN: 9788131773352

ABOUT THE BOOK
Any course in physics cannot be completed without learning quantum mechanics. This subject helps in understanding the individual behaviour of the subatomic particles that constitute all forms of matter. Principles of Quantum Mechanics comprehensively covers all relevant topics to meet the requirements of both undergraduate and postgraduate students of physics. The initial chapters of the book introduce the basic fundamentals of the subject to help the first-time learners and the later chapters cover aspects that will prepare them to apply quantum mechanics to understand the various physical phenomena, for example, the working of micro- and nano-devices. The book includes a detailed discussion on why classical mechanics, which is applicable at macroscopic level, cannot be applicable at microscopic level.

CONTENTS
1. Introduction
2. Wave-particle Duality
3. Wave Packets and Uncertainty Principle
4. Operators, Eigenstates, Eigenvalues and Schrodinger Equation
5. One-dimensional Problems
6. The Linear Harmonic Oscillator
7. The Linear Vector Space
8. The Linear Harmonic Oscillator - Revisited
9. Angular Momentum
10. Three-Dimensional Systems
11. Angular Momentum - Revisited
12. The Spin
13. Addition of Angular Momenta
14. WKB Approximation and Electron Tunneling
15. Time - Independent Perturbation theory
16. Time - Dependent Perturbation Theory
17. Semiclassical Theory of Radiations
18. Theory of Scattering
19. Theory of Measurement in Quantum Mechanics
20. Introduction to Quantum computing
21. Appendices
    A. Early Quantum Mechanics
    B. Some Supplementary Topics
    C. Some Mathematical Relations
    D. Various Tables

ABOUT THE AUTHOR
Ishwar Singh Tyagi is Emeritus Fellow at the Physics Dept. of IIT Roorkee. After completing his Ph.D. in 1976 from the University of Roorkee (now IIT Roorkee) he joined the Department of Physics as a faculty member in 1977 and became professor in 1996. His assignments as post-doctoral as well as visiting scientist took him to the New University of Ulster (NUU), Coleraine, in North Ireland and the Freie Universitat Berlin.

POD
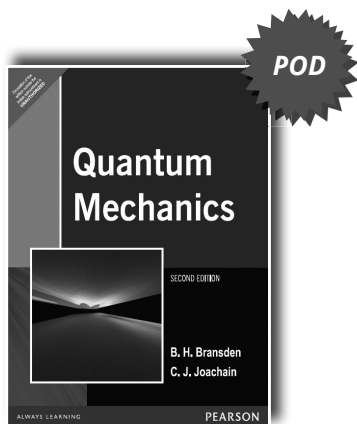
Quantum Mechanics, 2/e

✒ **B. H. Bransden** | **C. J. Joachain**

📄 **808** | © **2006**

ISBN: 9788131708392

ABOUT THE BOOK
This book gives a modern, comprehensive introduction to the principles of quantum mechanics, to the main approximation methods and to the application of quantum theory to a wide variety of systems. The needs of students having an average mathematical ability are kept very much in mind, with the avoidance of complex mathematical arguments and any undue compression of material.

FEATURES
- Comprehensive coverage of core material in quantum mechanics.
- Full and detailed explanations to help students of average mathematical ability.
- Additional topics covered in this edition include: Feynman's path integrals; the Berry phase; quantum dots; quantum jumps; and Bose-Einstein condensation.
- New chapter on relativistic quantum mechanics.
- Problems set to help students monitor their progress and increase understanding.

CONTENTS
1. The origins of quantum theory.
2. The wave function and the uncertainty principle.
3. The Schrodinger equation.
4. One-dimensional examples.
5. The formalism of quantum mechanics.
6. Angular momentum.
7. The Schrodinger equation in three dimensions.
8. Approximation methods for stationary problems.
9. Approximation methods for time-dependent problems.
10. Several- and many-particle systems.
11. The interaction of quantum systems with radiation.
12. The interaction of quantum systems with external electric and magnetic fields.
13. Quantum collision theory.
14. Quantum statistics.
15. Relativistic quantum mechanics.
16. Further applications of quantum mechanics.
17. Measurement and interpretation.

ABOUT THE AUTHOR(S)
B.H. Bransden, Department of Physics, University of Durham
C.J. Joachain, Physique Theorique, Universite Libre de Bruxelles University of Wisoconsin

Classical Mechanics, 3/e

✒ **Herbert Goldstein** | **Charles P. Poole** | **John Safko**

📄 **664** | © **2011**

ABOUT THE BOOK

For 30 years, this classic text has been the acknowledged standard in classical mechanics courses. *Classical Mechanics* enables students to make connections between classical and modern physics " an indispensable part of a physicist's education. The authors have updated the topics, applications, and notations to reflect today's physics curriculum. They introduce students to the increasingly important role that nonlinearities play in contemporary applications of classical mechanics. New numerical exercises help students develop skills in the use of computer techniques to solve problems in physics. Mathematical techniques are presented in detail so that the text remains fully accessible to students who have not had an intermediate course in classical mechanics.

FEATURES

- The classical approach of this leading text book has been revised and updated
- A section on the Euler and Lagrange exact solutions to the three-body problem
- A section on the damped driven oscillator as an example of the workings of the Josephson junction
- Chapter on canonical perturbation theory has been streamlined and the mathematics has been simplified
- Approximately 45 new problems, mostly in Chapters 1–8 and 11.
- Problems sets are now divided into "Derivations" and "Exercises"
- Solutions for 19 select problems have been provided in Appendix C

CONTENTS

1. Survey of the Elementary Principles
2. Variational Principles and Lagrange's Equations
3. The Central Force Problem
4. The Kinematics of Rigid Body Motion
5. The Rigid Body Equations of Motion
6. Oscillations
7. The Classical Mechanics of the Special Theory of Relativity

8. The Hamilton Equations of Motion
9. Canonical Transformations
10. Hamilton–Jacobi Theory and Action-Angle Variables
11. Classical Chaos
12. Canonical Perturbation Theory
13. Introduction to the Lagrangian and Hamiltonian Formulations for Continuous Systems and Fields
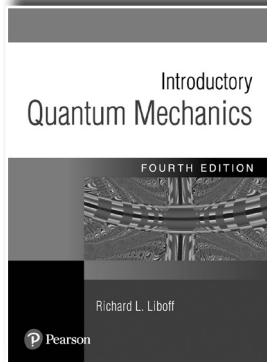
ABOUT THE AUTHOR(S)

Herbert Goldstein, Columbia University
Charles P. Poole Jr., University of South Carolina
John L. Safko, University of South Carolina

Introductory Quantum Mechanics, 4/e

Richard L. Liboff

896 | © 2006

ABOUT THE BOOK
Careful and detailed explanations of challenging concepts, and comprehensive and up-to-date coverage in this best-selling quantum mechanics text, continue to set the standard in physics education. In this new edition, a new chapter on the revolutionary topic of quantum computing (not currently covered in any other text at this level) and thorough updates to the rest of the text bring it up to date.

FEATURES
- Introductory Quantum Mechanics, Fourth Edition is well known for its wealth of great problems (869 in total).
- Comprehensive coverage makes the book adaptable to any course.
- The book uses precise presentation and careful use of appropriate math.
- A new chapter on the revolutionary topic of quantum computing and numerous revisions throughout the rest of the book bring it up to date.
- More than 30 new problems have been added.

CONTENTS
Part I. Elementary Principles and Applications to Problems in One Dimension.
1. Review of Concepts of Classical Mechanics.
2. Historical Review: Experiments and Theories.
3. The Postulates of Quantum Mechanics: Operators, Eigenfunctions, and Eigenvalues.
4. Preparatory Concepts: Function Spaces and Hermitian Operators.
5. Time Development, Conservation Theorems, and Parity.
6. Time Development, Conservation Theorems, and Parity.
7. Additional One-Dimensional Problems: Bound and Unbound States.
8. Finite Potential Well, Periodic Lattice, and Some Simple Problems with Two Degrees of Freedom.

Part II. Further Development of the Theory and Applications to Problems in Three Dimensions.
9. Angular Momentum.
10. Problems in Three Dimensions.
11. Elements of Matrix Mechanics: Spin Wavefunctions.
12. Application to Atomic, Molecular, Solid-State, and Nuclear Physics: Elements of Quantum Statistics.
13. Perturbation Theory.
14. Scattering in Three Dimensions.
15. Relativistic Quantum Mechanics.
16. Quantum Computing.

ABOUT THE AUTHOR
Richard L. Liboff is presently a Professor of Applied Physics, Applied Math, and Electrical Engineering at Cornell University. He has served as visiting professor at numerous universities and was awarded a Fulbright Scholarship in 1984 in support of a Visiting Professorship of Physics at Tel Aviv University. He has written over 100 scientific articles and has authored four textbooks. His research specialties include condensed-matter theory, kinetic theory, applied math, and elements of astrophysics.

NEW

THIRD EDITION

ELECTROMAGNETIC FIELDS AND WAVES

S. SALIVAHANAN
S. KARTHIE

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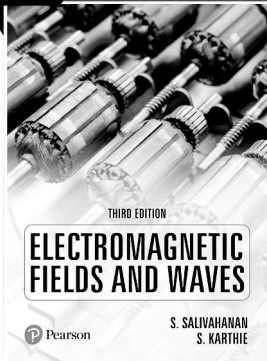
ISBN: 9788119896677

Electromagnetic Fields and Waves

✒ **S. Salivahanan** | **S. Karthie**

📄 **796** | © **2024**

Web Supplements

ABOUT THE BOOK

Electromagnetic fields and waves elucidates the fundamentals of electromagnetic fields for B.E/B. Tech courses in Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Telecommunication Engineering, M.Sc. (Electronics), B.Sc. (Physics), AMIE, Grade IETE degree programs and competitive examinations. The book comprises ten chapters arranged sequentially and presented in simple reader-friendly language. To aid understanding, numerous numerical problems with step-by-step solutions are provided. Each chapter concludes with a set of review questions to help readers to test their understanding of the subject.

FEATURES

- Presents the concepts in a simple and lucid manner providing clear explanations ideal for beginner readers.
- Detailed coverage of topics like static and dynamic fields, and their applications in electromagnetics.
- Encourages self-learning through numerous step-by-step solved examples
- Offers excellent pedagogy with 300 illustrations, 575 solved examples and 930 review questions

CONTENTS

1. Vector Analysis
2. Static Electric Fields
3. Conductors and Dielectrics
4. Static Magnetic Fields
5. Magnetic Forces and Materials
6. Time-Varying Fields and Maxwell's Equations
7. Electromagnetic Waves
8. Transmission Lines-I
9. Transmission lines-II
10. Wave guides
   Appendix A: Values of General Physical Constants
   Appendix B: Electric and Magnetic Field Quantities and their Units
   Appendix C: Conversion Factors and Prefixes
   Appendix D, Appendix E: Vector Identities
   Appendix F: Gradient, Divergence, Curl and Laplacian Operators
   Appendix G, Appendix H: Governing Laws in Time-Varying (Dynamic) Fields
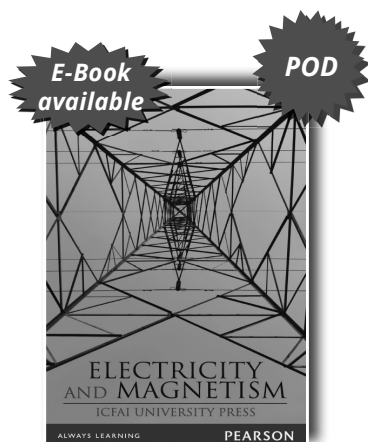   Appendix I: Important Formulae

ABOUT THE AUTHOR

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Electricity and Magnetism

✎ **ICFAI University Press**

📄 **440** | © **2012**

ABOUT THE BOOK

Electricity and Magnetism is designed for undergraduate courses in Physics. It comprehensively covers the topics of electricity and magnetism and brings out the relationship between the two forces with adequate emphasis on principles, theory and pedagogy. Illustrations are specially made to suit classroom presentation. Written in a simple and lucid language, the book progresses from the basic laws, which help the students to stay focused on the key tenets, without getting lost in the maze of intricate details

FEATURES

- It traces the origin of electromagnetic radiations, starting from the first principles.
- In-depth coverage of Current, Resistance and Electric Circuits, Gauss's Law and Magnetism
- Electric Charge and Electric Field and Electric Potential discussed in detail
- Student centric pedagogy with 90 solved examples and over 120 exercises.

CONTENTS

1. Electric Charge and Electric Field
2. Electric Potential
3. Current, Resistance and Electric Circuits
4. Gauss's Law
5. Capacitance and Dielectrics
6. Magnetism
7. Sources of Magnetic field
8. Electromagnetic Induction
9. Inductance
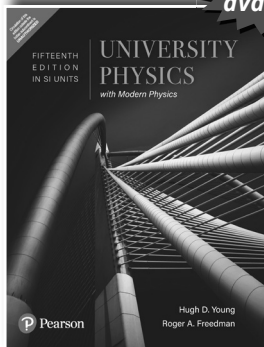10. Alternating Current
11. Electromagnetic Waves

ABOUT THE AUTHOR

ICFAI University Press, Hyderabad

University Physics with Modern Physics, 15/e

✒ **Roger A. Freedman | Hugh D. Young**

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E-Book available

ISBN: 9789353949297

ABOUT THE BOOK

University Physics has been revered for its emphasis on fundamental principles and its applications since its first edition. The new 15th Edition of University Physics with Modern Physics, now in SI Units, draws on insights from several users to help students see patterns and make connections between problem types. Students learn to recognize when to use similar steps in solving the same problem type and develop an understanding for problem solving approaches, rather than simply plugging values into an equation. This edition addresses students' tendency to focus on the objects and situations posed in a problem, rather than recognizing the underlying principle or the problem type.

FEATURES

- New—Key Example Variation Problems in the new Guided Practice section based on worked examples, build in difficulty by changing scenarios, swapping knowns and unknowns, and adding complexity to provide a wide range of related problems that use the same basic approach to solve.
- New—Key Concept statements appear at the end of every example, providing a summary of the key idea used in the solution to consolidate what was most important and what can be broadly applied to other problems.
- A research-based Problem-Solving Approach—Identify, Set Up, Execute, Evaluate—used in every example to teach students to tackle problems thoughtfully rather than cutting straight to the math.
- Expanded—Challenge Problems significantly stretch students by requiring sophisticated reasoning, often involving multiple steps or concepts.
- Expanded—Cumulative Problems promote advanced problem-solving techniques by covering knowledge and skills from previous chapters to be integrated with understanding from the current chapter.

Hallmark Pedagogy:

- Annotated Key Equations
- Caution Paragraphs
- Visual Summaries
- Problem-Solving Strategies
- Bridging Problems
- Conceptual Examples
- Biosciences-Related Problems
- Data Problems
- Passage Problems
- Test your understanding

CONTENTS

MECHANICS
1. Units, Physical Quantities, and Vectors
2. Motion Along a Straight Line
3. Motion in Two or Three Dimensions
4. Newton's Laws of Motion
5. Applying Newton's Laws
6. Work and Kinetic Energy
7. Potential Energy and Energy Conservation
8. Momentum, Impulse, and Collisions
9. Rotation of Rigid Bodies
10. Dynamics of Rotational Motion
11. Equilibrium and Elasticity
12. Fluid Mechanics
13. Gravitation
14. Periodic Motion

WAVES/ACOUSTICS
15. Mechanical Waves
16. Sound and Hearing

Thermodynamics
17. Temperature and Heat
18. Thermal Properties of Matter
19. The First Law of Thermodynamics
20. The Second Law of Thermodynamics

ELECTROMAGNETISM
21. Electric Charge and Electric Field
22. Gauss's Law
23. Electric Potential
24. Capacitance and Dielectrics
25. Current, Resistance, and Electromotive Force
26. Direct-Current Circuits

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Roger A. Freedman is a Lecturer in Physics at the University of California, Santa Barbara. He was an undergraduate at the University of California campuses in San Diego and Los Angeles and did his doctoral research in nuclear theory at Stanford University under the direction of Professor J. Dirk Walecka. Dr. Freedman came to UCSB in 1981 after three years of teaching and doing research at the University of Washington

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A. Lewis Ford is Professor of Physics at Texas A&M University. He received a B.A. from Rice University in 1968 and a Ph.D. in chemical physics from the University of Texas at Austin in 1972. After a one-year postdoc at Harvard University, he joined the Texas A&M physics faculty in 1973 and has been there ever since. Professor Ford has specialized in theoretical atomic physics—in particular, atomic collisions. At Texas A&M he has taught a variety of undergraduate and graduate courses, but primarily introductory physics.

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POD

GENERAL THEORY OF
RELATIVITY
S. P. PURI
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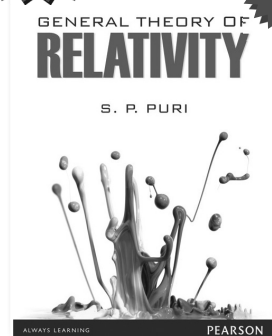
ISBN: 9788131795682

General Theory of Relativity

✎ **S P Puri**

📄 **368** | © **2013**

Web Supplements

ABOUT THE BOOK

General Theory of Relativity is the generalization of special relativity to include gravitation. It emphasizes that the law of Physics must be same for all observers and thereby extended it to non-inertial frames.This text is intended as a textbook for the students of Physics at the undergraduate and postgraduate level. It gives equal importance to the mathematical and physical aspects of general theory of relativity and hence strengthening the foregrounds.
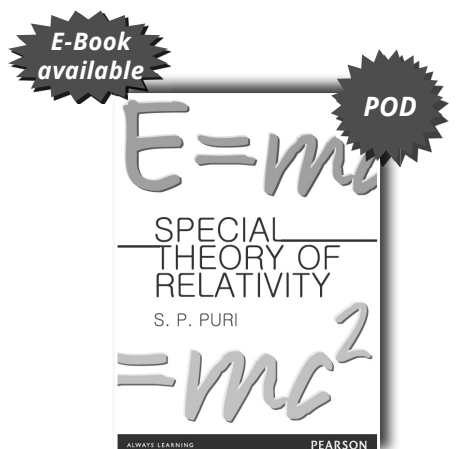
FEATURES
- Detailed study of Tensor analysis
- In-depth coverage on cosmology
- An introductory chapter on Special Theory of Relativity
- 36 figures, 18 solved problems and 82 unsolved problems with answers

2.12

CONTENTS

Historical Perspective
1. A Brief Review on Special Relativity
2. Tensor Analysis and Riemannian Geometry
   Part 1. Line Element
   Part 2. Geodesic Curves. Covariant Differentiation
   Part 3. Curvature Tensor
3. Einstein's Field Equations
4. Einstein's Law of Gravitation for Empty Space. Schwarzschild Solution
5. Einstein's Law of Gravitation for Non-empty Space
6. Gravitational Waves
7. Black Holes
8. Cosmology
9. Astrophysics

ABOUT THE AUTHOR

SP Puri is a former U.G.C Emeritus Fellow. He was also a Professor and Chairman at Department of Physics in Panjab University, Chandigarh.

E-Book available

POD

SPECIAL THEORY OF RELATIVITY

S. P. PURI

ALWAYS LEARNING   PEARSON

ISBN: 9788131785010

Special Theory of Relativity

✎ **S P Puri**

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ABOUT THE BOOK

Special Theory of Relativity is primarily intended as a textbook for the students of physics at the undergraduate level. Examining developments in the field as well as the predictions of special relativity that have taken place since 1959, its comprehensive coverage includes engaging explanations of the mathematical treatment as well as the applications of the special theory of relativity.

FEATURES

- Includes applications of special theory of relativity in a chapter
- 45 solved problems and 100 unsolved problems for practice
- Answers to unsolved problems included

CONTENTS

1. Newtonian Mechanics and Galilean Principle of Relativity
2. Lorentz Transformations and Its Kinematic Consequences, Intervals, Causality
3. Mathematical Background
4. Relativistic Mechanics of a Particle, Collisions and Conservation Laws
5. Optical Applications of Lorentz Transformation
6. Covariant Electrodynamics
7. Applications of Special Theory of Relativity
8. Introduction to General Relativity

ABOUT THE AUTHOR

S. P. Puri, is a former U.G.C. Emeritus Fellow, was Professor and Chairman, Department of Physics, Punjab University, Chandigarh.

Physics of Atoms and Molecules, 2/e

B.H. Bransden | **C. J. Joachain**

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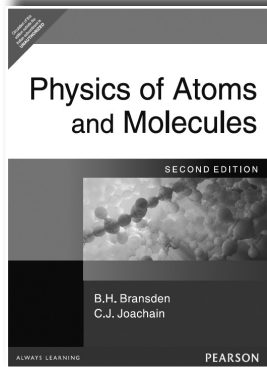
ABOUT THE BOOK
The study of atomic and molecular physics is a key component of undergraduate courses in physics, because of its fundamental importance to the understanding of many aspects of modern physics. The aim of this new edition is to provide a unified account of the subject within an undergraduate framework, taking the opportunity to make improvements based on the teaching experience of users of the first edition, and cover important new developments in the subject.

FEATURES
- Revised material on molecular structure and spectra.
- Extended material on electronic and atomic collisions.
- A new chapter describing applications based on the use of the maser and the laser, including laser spectroscopy, laser cooling and trapping of atoms, Bose Einstein condensation, atom lasers and atomic systems in intense laser fields.
- A new chapter describing other applications, including magnetic resonance, atom optics, atoms in cavities, ions in traps, atomic clocks and astrophysics.
- Revised appendices include new material on molecules and updated tables of physical constants.
- Solutions of selected problems.

CONTENTS
1. Electrons, photons and atoms.
2. The elements of quantum mechanics.
3. One-electron atoms.
4. Interaction of one-electron atoms with electomagnetic radiation.
5. One-electron atoms: fine structure and hyperfine structure.
6. Interaction of one-electron atoms with external electric and magnetic fields.
7. Two-electron atoms.
8. Many-electron atoms.
9. Interaction of many-electron atoms with electromagnetic radiation and with static electric and magnetic fields.
10. Molecular structure.
11. Molecular spectra.
12. Atomic collisions: basic concepts and potential scattering.
13. Electron-atom collisions and atomic photoionisation.
14. Atom-atom collisions.
15. Masers, lasers and their interaction with atoms and molecules.
16. Further developments and applications of atomic and molecular physics.
    Appendices.

ABOUT THE AUTHOR(S)

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C.J. Joachain, Physique Theorique, Universite Libre de Bruxelles

SECOND EDITION

MODERN PHYSICS

RANDY HARRIS

ALWAYS LEARNING **PEARSON**
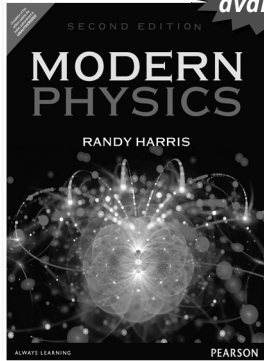
ISBN: 9789332570962

Modern Physics, 2/e

✒ **Randy Harris**

📄 **640** | © **2016**

ABOUT THE BOOK
Modern Physics, Second Edition provides a clear, precise, and contemporary introduction to the theory, experiment, and applications of modern physics. Ideal for both physics majors and engineers, this eagerly awaited second edition puts the modern back into modern physics courses. Pedagogical features throughout the text focus the reader on the core concepts and theories while offering optional, more advanced sections, examples, and cutting-edge applications to suit a variety of students and courses. Critically acclaimed for his lucid style, in the second edition, Randy Harris applies the same insights into recent developments in physics, engineering, and technology.

FEATURES
- A contemporary approach that incorporates recent developments in physics and up-to-date applications in engineering and technology make the physics relevant and engaging.
- Critically acclaimed for a lucid and precise style, the book carefully balances concepts, theory, experimental data, and theory. It strives for complete exposition of fundamental ideas while addressing common misconceptions.
- Progress and Applications sections survey current applications of the theories described in the chapter. Students see how what they learn applies to their chosen career and the opportunities available for professional physicists and engineers.
- Worked Examples in the text carefully walk students step-by-step through solving problems to better prepare them to tackle the end-of-chapter problems.
- Optional/Advanced sections are clearly labeled so that professors can pick and choose sections to optimally match the level, scope, and emphasis of their course.
- Chapter Outlines and brief introductions give students a learning roadmap to the chapter ahead.
- Chapter Summaries now incorporate a Basic Equations section to show how each equation relates to the key topics in the chapter, and to one another.
- Challenge Problems are highlighted so professors can easily build assignments of ideal level, and know where they can push their best students.

CONTENTS
1. Dawn of a New Age
2. Special Relativity
3. Waves and Particles I: Electromagnetic Radiation Behaving as Particles
4. Waves and Particles II: Matter Behaving as Waves
5. Bound States: Simple Cases
6. Unbound States: Obstacles, Tunneling and Particle-Wave Propagation
7. Quantum Mechanics in Three Dimensions and The Hydrogen Atom
8. Spin and Atomic Physics
9. Statistical Mechanics
10. Bonding: Molecules and Solids
11. Nuclear Physics
12. Fundamental Particles and Interactions Appendices

ABOUT THE AUTHOR
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E-Book available

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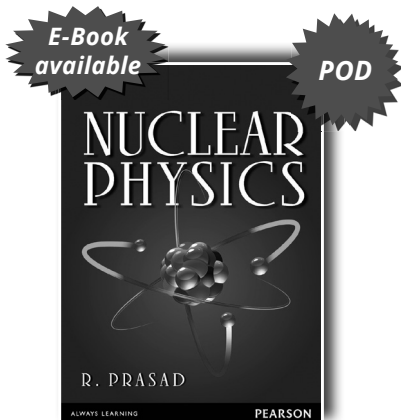
ISBN: 9789332522657

Nuclear Physics

✎ **R Prasad**

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ABOUT THE BOOK

Nuclear Physics provides a clear and concise introduction to the subject. Fundamentals aside, the book reviews the evolution of the subject from its emergence to its present-day advancements and critically examines the future directions of nuclear and particle physics. The book brings together the essence of nuclear, particle and cosmic ray physics, serving as an ideal text for undergraduate students.

FEATURES

- Exclusive chapters on elementary particles and cosmic rays
- Focus on contemporary developments like heavy ion reactions, in-complete fusion, neutrino oscillations, big accelerators, colliding beam experiments & Higg's particle
- Over 220 illustrations
- Rich pedagogy comprising over 300 multiple choice questions and problems for practice
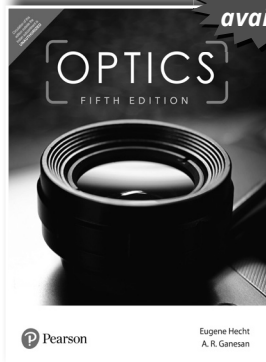
CONTENTS

1. The Birth of the Nucleus
2. Basic Properties of the Nucleus and their Determination
3. Force between Nucleons
4. Quantum Mechanical analysis of some Nuclear systems
5. Characteristics of stable Nuclei and Nuclear Models
6. Radioactive Decay
7. Nuclear radiations and Detectors
8. Nuclear reactions
9. Particle accelerators
10. Nuclear energy
11. Fundamentals of elementary Particles
12. Cosmic rays

ABOUT THE AUTHOR

R. Prasad has more than 40 years experience of teaching physics and nuclear physics to graduate and postgraduate students. He is an ex-professor of nuclear physics at the Aligarh Muslim University, Aligarh, India.

Throughout his career, Prof. Prasad supervised half a dozen Ph.D, about two dozen M.Phil, large number of M.Sc projects, eleven research projects funded by various agencies in India and carried out post doctoral research at many international and national institutes/universities including the First Institute of Experimental Physics, University of Hamburg, Germany and Atom Institute, Technical Universities of Austria, Vienna, Austria among many. He has also attended and chaired sessions of a large number of international and national conferences, seminars and symposia and delivered invited talks. He has published more than 80 research papers in various reputed international and national journals and presented six science-based television films under the UGC higher education programme. He is a recipient of prestigious DAAD (German) Fellowship, Post-doc fellowship of the Government of Austria, and Emeritus fellowship of UGC, India. He is a life member of many academic societies of the country.

ISBN: 9789353439590

Optics, 5/e

Eugene Hecht | **A. R. Ganesan**

752 | © 2020

Web Supplements

ABOUT THE BOOK
Optics, Fifth Edition is distinguished by three core imperatives: up-to-date content in line with the ever-evolving technological advances in the Optics field a modern approach to discourse including studies on photons, phasors, and theory and improvements and revisions to the previous edition's pedagogy including over one hundred new worked examples. Sustaining market leadership for over twenty years, this edition continues to demonstrate range and balance in subject matter. The text is grounded in traditional methodology, while providing an early introduction to the powerful perspective of the Fourier theory, which is crucial to present-day analysis. Electron and neutron diffraction patterns are pictured alongside the customary photon images, and every piece of art has been scrutinized for accuracy and altered where appropriate to improve clarity.

FEATURES
New to this edition
- UPDATED! New illustrations, photos, and revised art are included throughout the text, enhancing the already outstanding visual pedagogy of the book.
- UPDATED! Promoting the balance of theory and instrumentation, this comprehensive text provides students with a classical background to ensure success in their field.
- Anon-mathematical introduction sets the stage for traditional presentation in Optics.
- Traditional discussion of interference is extended, using phasors to graphically represent electric-field amplitudes, giving students an alternative way to visualize and understand core elements.
- Graphical analysis is used in addition to the standard, mathematical treatment of Fourier series to conceptually show what the integrals are actually doing to promote student comprehension.
- A complete Wave Motion section includes helical waves and an added section on Twisted Light.
- Divergence and Curl Comprehension ensures students' understanding of the physical correspondence of divergence and curl in simple terms.
- Understanding Negative Refraction is an active area of contemporary research, which is explained in refined yet simple terms along with a brief introduction to the basic physics involved.
- Constructing Refracted Rays highlights the method devised by Huygens Optics and allows a convenient way to appreciate refraction in anisotropic crystals.
- The Geometrical Optics is a collection of new art which clearly illustrates the behavior of lenses and mirrors, along with additional remarks on fiberoptics; including the subsections Virtual Objects, Focal-Plane Ray Tracing, and Holey/Microstructured Fibers.
- Fourier Optics includes a new subsection, Two-Dimensional Images, and contains a remarkable series of illustrations depicting how spatial frequency components combine to create images.
- The Modern Optics contains an enriched and updated treatment of lasers accompanied by tables and illustrations and includes a subsection on Optoelectronic Image Reconstruction.

CONTENTS

13. Modern Optics: Lasers and Other Topics
    Appendix 1
    Appendix 2

Table 1 Solutions to Selected Problems
Bibliography
Index
List of Tables

ABOUT THE AUTHOR(S)

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A. R. Ganesan Professor, Department of Physics Indian Institute of Technology Madras Chennai

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PHYSICS FUNDAMENTALS

Conceptual Physics, 13/e

✎ **Paul G. Hewitt**

📄 **916** | © **2024**

Web Supplements

NEW

E-Book available

ISBN: 9789361598289

ABOUT THE BOOK
Paul Hewitt's best-selling Conceptual Physics defined the liberal arts physics course over 30 years ago and continues as the benchmark. Hewitt's text is guided by the "principle of concepts before calculations" and is famous for engaging students with real-world analogies and imagery to build a strong conceptual understanding of physical principles, ranging from classical mechanics to modern physics. The 13th Edition continues to make physics delightful for students with informative and fun Hewitt-Drew-It screencasts, updated content and applications, and new engaging activities.

FEATURES
- Current applications and topics include digital technology, environment, and energy. These topics are at the forefront of everyone's consciousness these days and an intelligent awareness of their scientific foundations will give rise to better decision making in the political arena and keep students aware of current events.
- Chapter Openers feature updated photos to reflect the diversity found in the sciences today and include new photos and descriptions of professors and those in industry.
- End-of-Chapter sections align to Bloom's Taxonomy with all end-of-chapter material falling into Bloom's taxonomy categories.
- Check Yourself and Check Your Answer boxes embedded within the text help students gauge their level of understanding of the material just covered.
- Practicing Physics boxes allow students to work through a problem or experiment based on the material covered in each chapter.
- Conceptual Think and Rank end of chapter exercises help students master important concepts.

CONTENTS
1. About Science

Part 1: MECHANICS
2. Newton's First Law of Motion: Inertia
3. Linear Motion
4. Newton's Second Law of Motion
5. Newton's Third Law of Motion
6. Momentum
7. Energy
8. Rotational Motion
9. Gravity
10. Projectile and Satellite Motion

Part 2: PROPERTIES OF MATTER
11. The Atomic Nature of Matter
12. Solids
13. Liquids
14. Gases

Part 3: HEAT

Part 4: SOUND

Part 5: ELECTRICITY AND MAGNETISM

Part 6: LIGHT

Part 7: ATOMIC AND NUCLEAR PHYSICS

Part 8: RELATIVITY

ABOUT THE AUTHOR

Paul G. Hewitt, Former silver-medal boxing champion, sign painter, uranium prospector, and soldier, Paul began college at the age of 27, with the help of the GI Bill. He pioneered the conceptual approach to teaching physics at the City College of San Francisco. He has taught as a guest teacher at various middle schools and high schools, the University of California at both the Berkeley and Santa Cruz campuses, and the University of Hawaii at both the Manoa and Hilo campuses. He also taught for 20 years at the Exploratorium in San Francisco, which honored him with its Outstanding Educator Award in 2000. He is the author of Conceptual Physics and a co-author of Conceptual Physical Science and Conceptual Physical Science Explorations (with John Suchocki and Leslie Hewitt)

NEP 2020

MATHEMATICAL PHYSICS AND NEWTONIAN MECHANICS

E-Book available

SURESH CHANDRA
MOHIT KUMAR SHARMA
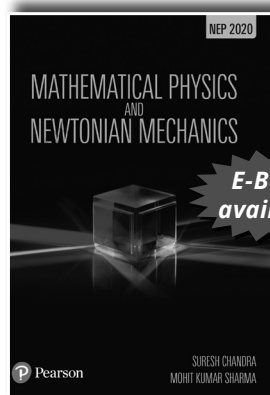
ISBN: 9789357053242

Mathematical Physics and Newtonian Mechanics

✎ **Suresh Chandra | Mohit Kumar Sharma**

📄 **516** | © **2023**

Web Supplements

ABOUT THE BOOK

This textbook is designed to meet the syllabus requirements of the undergraduate students of physics as per the Common Minimum Syllabus prescribed for all Uttar Pradesh State Universities and Colleges under the recommended National Education Policy 2020, for the paper on Mathematical Physics and Newtonian Mechanics and the lab course on Mechanical Properties of Matter. The topics are discussed in a methodical way and a number of topics such as Pseudo-Vector, Pseudo-Scalar, Wedge Product of Vectors, etc, have been discussed in a very systematic and simple manner to suit the beginner learners.

FEATURES

- The concepts are explained in a student-friendly language
- Topics are supported by exercises and review questions for better understanding
- Includes a lab manual on Mechanical properties of Matter

CONTENTS

1. Vector Algebra
2. Vector Calculus
3. Coordinate Systems
4. Introduction to Tensors
5. Dynamics of a System of Particles
6. Dynamics of a Rigid Body
7. Motion of Planets and Satellites
8. Wave Motion
9. Before going to Laboratory
10. In Laboratory

ABOUT THE AUTHOR

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Dr. Mohit Kumar Sharma, M.Sc., M.Phil., Ph.D. (Physics), Young Scientist Awardee (ISCA, 2014) National Postdoctoral Fellow, SERB, DST, New Delhi (2017 - 2019). Currently, Assistant Professor (Physics), Sunderdeep Group of Institution , Dasna, Ghaziabad (U.P.)
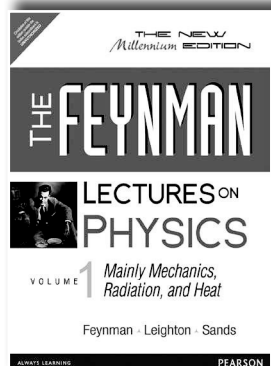
The Feynman Lectures on Physics: Volume I: The New Millennium Edition: Mainly Mechanics, Radiation, and Heat

✒ **Richard P. Feynman** | **Robert B. Leighton** | **Matthew Sands**

📄 **560** | © **2012**

ISBN: 9788131792117

ABOUT THE BOOK

Timeless and collectible, *The Feynman Lectures on Physics* are essential reading, not just for students of Physics, but for anyone seeking an insightful introduction to the field from the inimitable Richard P. Feynman.

When I look at The Feynman Lectures on Physics, I feel a very personal sense of closeness to them," said Feynman, looking back at the origins of these books. Ranging from Newton's laws through the special theory of relativity, optics, statistical mechanics, and thermodynamics, the lectures collected in Volume I of *The Feynman Lectures on Physics* stand as a monument to clear exposition and deep insightand to Feynman's deep connection with the field.
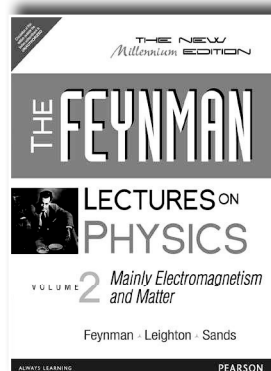
CONTENTS

ABOUT THE AUTHOR(S)

Richard P. Feynman was a professor of physics at Caltech from 1959 to 1988. In 1965 he shared a Nobel Prize in Physics for his work on the development of quantum electrodynamics.

Robert B. Leighton was a physicist and astronomer, an esteemed teacher and textbook author, and professor at Caltech for many years.

Matthew Sands has been a professor at Caltech, deputy director of the Stanford Linear Accelerator Centre, and vice chancellor for science at the University of California, Santa Cruz.

The Feynman Lectures on Physics: Volume II: The New Millennium Edition: Mainly Electromagnetism and Matter

✒ **Richard P. Feynman** | **Robert B. Leighton** | **Matthew Sands**

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ABOUT THE BOOK

Timeless and collectible, *The Feynman Lectures on Physics* are essential reading, not just for students of Physics, but for anyone seeking an insightful introduction to the field from the inimitable Richard P. Feynman.

When I look at The Feynman Lectures on Physics, "I feel a very personal sense of closeness to them," said Feynman, looking back at the origins of these books. Ranging from Gauss's law and Maxwell's electrodynamics to waveguides, dielectrics, magnetic materials, and elasticity, the lectures collected in Volume II of *The Feynman Lectures on Physics* stand as a monument to clear exposition and deep insight and to Feynman's deep connection with the field.
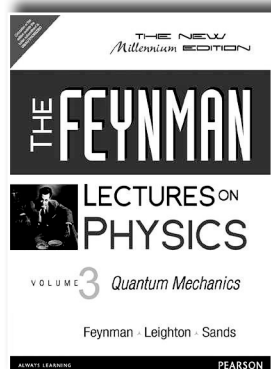
CONTENTS

1. Electromagnetism
2. Differential Calculus of Vector Fields
3. Vector Integral Calculus
4. Electrostatics
5. Application of Gauss' Law
6. The Electric Field in Various Circumstances
7. The Electric Field in Various Circumstances (Continued)
8. Electrostatic Energy
9. Electricity in the Atmosphere
10. Dielectrics
11. Inside Dielectrics
12. Electrostatic Analogs
13. Magnetostatics
14. The Magnetic Field in Various Situations
15. The Vector Potential
16. Induced Currents
17. The Laws of Induction
18. The Maxwell Equations
19. The Principle of Least Action
20. Solutions of Maxwell's Equations in Free Space
21. Solutions of Maxwell's Equations with Currents and Charges
22. AC Circuits
23. Cavity Resonators
24. Waveguides
25. Electrodynamics in Relativistic Notation
26. Lorentz Transformations of the Momentum
27. Field Energy and Field Momentum
28. Electromagnetic Mass
29. The Motion of Charges in Electric and magnetic Field
30. The Internal Geometry of Crystals
31. Tensors
32. Refractive Index of Dense Materials
33. Reflection from Surfaces
34. The Magnetism of Matter
35. Paramagnetism and Magnetic Resonance
36. Ferromagnetism
37. Magnetic Materials
38. Elasticity
39. Elastic Materials
40. The Flow of Dry Water
41. The Flow of Wet Water
42. Curved Space

ABOUT THE AUTHOR(S)

Richard P. Feynman was a professor of physics at Caltech from 1959 to 1988. In 1965 he shared a Nobel Prize in Physics for his work on the development of quantum electrodynamics.

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The Feynman Lectures on Physics: Volume III: The New Millennium Edition: Quantum Mechanics

Richard P. Feynman | **Robert B. Leighton** | **Matthew Sands**

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ABOUT THE BOOK

Timeless and collectible, *The Feynman Lectures on Physics* are essential reading, not just for students of Physics, but for anyone seeking an insightful introduction to the field from the inimitable Richard P. Feynman.

When I look at The Feynman Lectures on Physics, I feel a very personal sense of closeness to them," said Feynman, looking back at the origins of these books. Ranging from probability amplitudes to spin, two-state systems, propagation in a crystal lattice, semiconductors, symmetry, and conservation laws, the lectures collected in Volume lll of *The Feynman Lectures on Physics* stand as a monument to clear exposition and deep insightand to Feynman's deep connection with the field.

CONTENTS

1. Quantum Behavior
2. The Relation of waves and Particles Viewpoints
3. Probability Amplitudes
4. Identical Particles
5. Spin One
6. Spin One-Half
7. The Dependence of Amplitudes on Time
8. The Hamiltonian Matrix
9. The Ammonia Maser
10. Other Two-State Systems
11. More Two-State Systems
12. The Hyperfine Splitting in Hydrogen
13. Propagation in a Crystal Lattice
14. Semiconductors
15. The Independent Particle Approximation
16. The Dependence of Amplitudes on Position
17. Symmetry and Conservation Laws
18. Angular Momentum
19. The Hydrogen Atom and The Periodic Table
20. Operators
21. The Schrodinger Equation in a Classical Context: A Seminar on Superconductivity

ABOUT THE AUTHOR(S)

Richard P. Feynman was a professor of physics at Caltech from 1959 to 1988. In 1965 he shared a Nobel Prize in Physics for his work on the development of quantum electrodynamics.

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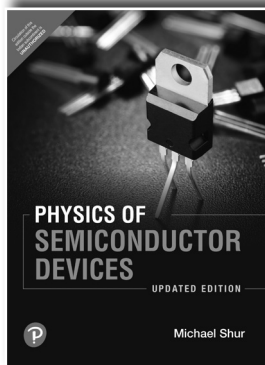
Physics of Semiconductor Devices, Updated edition

✎ **Michael Shur**

📄 **664** | © **2019**

ABOUT THE BOOK

This book provides a practical introduction to the basics of semiconductor physics as well as insights into important developments, such as amorphous silicon, compound semiconductor technologies, and novel heterostructure transistors.

FEATURES

- Implements all theories and models discussed in microcomputer programs
  - Providing readers with a useful "toolbox" for the modeling and simulation of semiconductor devices.
- Includes detailed appendices with useful information on semiconductor parameters which help readers to solve practical problems related to the analysis, design, and characterization of different semiconductor devices.
- Includes over 35 microcomputer programs and nearly 150 problems.

CONTENTS

1. Basic Semiconductor Physics
2. p-n Junctions, Schottky Barrier Junctions, Heterojunctions and Ohmic Contacts
3. Bipolar Junction Transistors
4. Field Effect Transistors
5. Photonic Devices
6. Transferred-Electron Devices and Avalanche Diodes
7. Novel Devices

ABOUT THE AUTHOR

Michael Shur, University of Virginia.
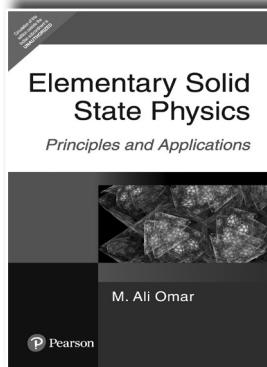
Elementary Solid State Physics:
Principles and Applications

M. Ali Omar

669 | © 2005

ABOUT THE BOOK

The volume is intended to serve as a general text in solid state physics for undergraduates in physics, applied physics, engineering, and other related scientific disciplines. It covers a wide range of topics with as many practical applications as possible.

CONTENTS

1. Crystal Structures and Interatomic Forces
2. X-Ray, Neutron, and Electron Diffraction in Crystals
3. Lattice Vibrations: Thermal, Acoustic, and Optical Properties
4. Metals I: The Free-Electron Model
5. Metals II: Energy Bands in Solids
6. Semiconductors I: Theory
7. Semiconductors II: Devices
8. Dielectric and Optical Properties of Solids
9. Magnetism and Magnetic Resonances
10. Superconductivity
11. Topics in Metallurgy and Defects in Solids
12. Materials and Solid-State Chemistry
13. Solid-State Biophysics

ABOUT THE AUTHOR

M. Ali Omar, Lowell Technological Institute

E-Book available
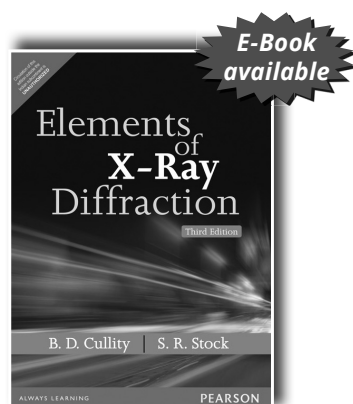
Elements of X-Ray Diffraction, 3/e

B. D. Cullity | **S.R. Stock**

656 | © **2014**

ABOUT THE BOOK

This revision of a classical text is intended to acquaint the reader, who has no pri- or knowledge of the subject, with the theory of x-ray diffraction, the experimental methods involved, and the main applications. The text is a collection of principles and methods designed directly for the student and not a reference tool for the advanced reader

FEATURES

- No metallurgical data are given beyond that necessary to illustrate the diffraction methods involved.
- X-ray diffraction is stressed rather than metallurgy.
- The book is divided into three main parts—Fundamentals; experimental methods; and applications.
- The subject of crystal structure is approached through, and, based on, the concept of the point lattice (Bravais lattice), because the point lattice of a substance is so closely related to its diffraction pattern.
- The book is written entirely in terms of the Bragg law and can be read without any knowledge of the reciprocal lattice.

CONTENTS

1. Properties of X-rays.
2. Geometry of Crystals.
3. Diffraction I: Directions of Diffracted Beams.
4. Diffraction II: Intensities of Diffracted Beams.
5. Diffraction III: Non-Ideal Samples.
6. Laure Photographs.
7. Powder Photographs.
8. Diffractometer and Spectrometer.
9. Orientation and Quality of Single Crystals.
10. Structure of Polycrystalline Aggregates.
11. Determination of Crystal Structure.
12. Precise Parameter Measurements.
13. Phase-Diagram Determination.
14. Order-Disorder Transformation.
15. Chemical Analysis of X-ray Diffraction.
16. Chemical Analysis by X-ray Spectrometry.
17. Measurements of Residual Stress.
18. Polymers.
19. Small Angle Scatters.
20. Transmission Electron Microscope.

ABOUT THE AUTHOR(S)

B.D. Cullity (Deceased) University of Notre Dame
**S.R. Stock,** Georgia Institute of Technology

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9788131708392	Bransden / Joachain	Quantum Mechanics, 2/e	1450	6
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9789357053242	Chandra / Sharma	Mathematical Physics and Newtonian Mechanics, 1e	680	19
9789332535169	Cullity / Stock	Elements of X-Ray Diffraction, 3/e	1030	25
9788131792117	Feynman / Leighton / Sands	The Feynman Lectures on Physics: Volume I: The New Millennium Edition: Mainly Mechanics, Radiation, and Heat	830	20
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9789332522657	Prasad	Nuclear Physics	790	16
9788131795682	Puri	General Theory of Relativity	660	12
9788131785010	Puri	Special Theory of Relativity	530	13

ISBN	Author	Title	Price	Page
9788177589160	Sakurai	Advanced Quantum Mechanics	1050	3
9788119896677	Salivahanan / Karthie	Electromagnetic Fields and Waves	780	9
9789353430061	Shur	Physics of Semiconductor Devices, Updated edition,	950	23
9789332573918	Symon	Mechanics, 3/e	1160	4
9788131773352	Tyagi	Principles of Quantum Mechanics	790	5

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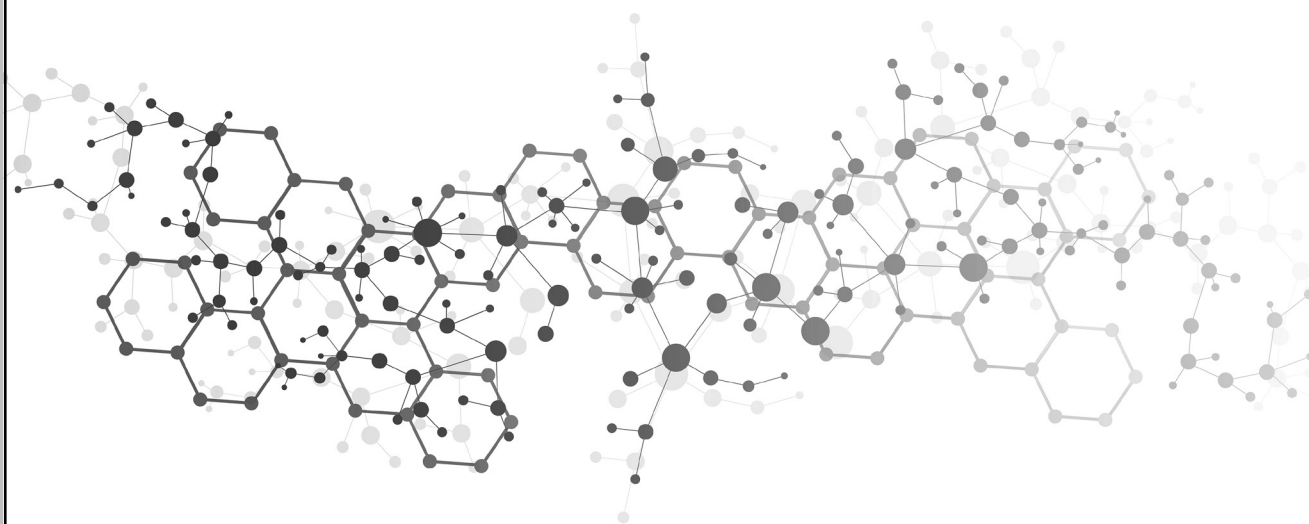
Chemistry

CONTENTS

E-Book available

CHEMISTRY

8e

Pearson

JILL K. ROBINSON
JOHN E. McMURRY
ROBERT C. FAY

ISBN: 9789356063419

Chemistry, 8/e

✒ **Jill Kirsten Robinson** | **John E. McMurry**

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Web Supplements
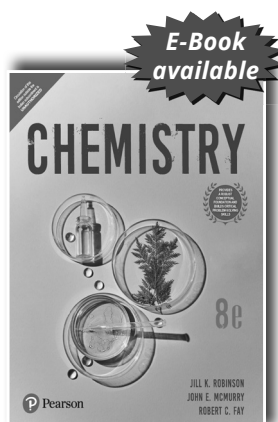
ABOUT THE BOOK

Robinson/McMurry/Fay's **Chemistry**, known for a concise and united author voice, conceptual focus, extensive worked examples, and thoroughly constructed connections between organic, biological, and general chemistry, highlights the application of chemistry to students' lives and careers. Lead author Jill Robinson strengthens the student orientation by creating more engaging, active learning opportunities for students and faculty. With the 8th Edition, Robinson draws upon her exceptional teaching skills to provide new interactive experiences that help identify and address students' preconceptions.

FEATURES

- New and Updated - Worked Examples provide more than any other text on the market and are tightly integrated into the text's flow and concise narrative.
- Updated - End-of-Chapter Problems have been reviewed and analyzed by author Jill Robinson for accuracy and to ensure each problem is tied to a learning objective in the end-of-chapter Study Guide. All End-of-Chapter problems now tie to specific examples throughout the text, supporting the intuitive flow of material.
- Updated - Inquiry sections highlight the importance of chemistry, promote student interest, and deepen student understanding of the content by showcasing problems that revisit several chapter concepts.
- Conceptual Problems: Conceptual understanding is a primary focus of this book.

- Conceptual problems are intended to help with the critical skill of visualizing the structure and interactions of atoms and molecules while probing the understanding of key principles rather than the ability to correctly use numbers in an equation.
- Excellent Pedagogy
- Big Idea- Questions Figure It Out- Questions
- Practice Problems Apply Problems
- Inquiry sections Conceptual Problems
- Key Terms Key Equations
- Section Problems Multiconcept Problems
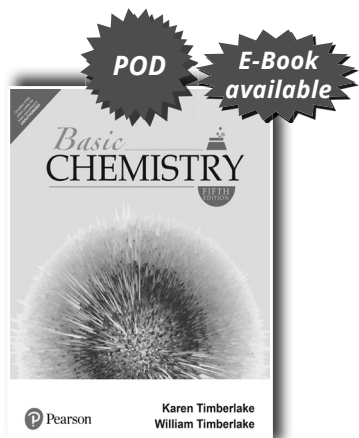- End-of-Chapter- Practice Test End-of-Chapter-Study Guide

CONTENTS

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Jill Kirsten Robinson, Indiana University
John E. McMurry, Cornell University, Robert C. Fay, Cornell University

ISBN: 9789353438753

Basic Chemistry, 5/e

✎ **Karen C Timberlake**

📄 **724** | © **2020**

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ABOUT THE BOOK

Basic Chemistry introduces students to the essential scientific and mathematical concepts of general chemistry. With accessible language and a moderate pace, the text is easy-to-follow for first-time chemistry students, as well as those hoping to renew their studies of the subject. In the Fifth Edition, Bill and Karen Timberlake carefully develop core ideas while relating them to the possibility of future careers. The book guides students through basic chemistry problem solving with engaging visuals and a focus on developing the math skills necessary to be successful in the course. End of chapter questions strategically promote integration of cumulative ideas, allowing students to develop a strong foundation for learning chemistry and encouraging them to continue their studies in the field.

FEATURES

- **Guides to Problem Solving (GPS)** illustrate the steps needed to solve a problem and provide a visual guide for students to use in solving future problems.
- **NEW! "Try It First" feature** precedes the Solution section of each Sample Problem, encouraging students to work on the problem before reading the given Solution and helping them learn to recall new ideas.
- **NEW! Connect features** specify information that relates the Given and Need sections in Analyze the

Problems to help students identify and connect the components within a word problem and set up a solution strategy.
- **NEW! Follow-Up Stories** provide follow-up to the discussion in the chapter opener and include application questions.
- **Analyze the Problems** convert a word problem into components for problem solving.

CONTENTS

1. Chemistry in Our Lives
2. Chemistry and Measurements
3. Matter and Energy
4. Atoms and Elements
5. Electronic Structure of Atoms and Periodic Trends
6. Ionic and Molecular Compounds
7. Chemical Quantities
8. Chemical Reactions
9. Chemical Quantities in Reactions
10. Bonding and Properties of Solids and Liquids
11. Gases
12. Solutions
13. Reaction Rates and Chemical Equilibrium
14. Acids and Bases
15. Oxidation and Reduction
16. Nuclear Chemistry
17. Organic Chemistry
18. Biochemistry

ABOUT THE AUTHOR

Karen C. Timberlake is Professor Emerita of chemistry at Los Angeles Valley College, where she taught chemistry for allied health and preparatory chemistry for 36 years. She received her bachelor's degree in chemistry from the University of Washington and her master's degree in biochemistry from the University of California at Los Angeles.

Professor Timberlake has been writing chemistry textbooks for 35 years. During that time, her name has become associated with the strategic use of pedagogical tools that promote student success in chemistry and the application of chemistry to real-life situations. More than one million students have learned chemistry using texts, laboratory manuals, and study guides written by Karen Timberlake.

Heterocyclic Chemistry, 3/e

Thomas L. Gilchrist

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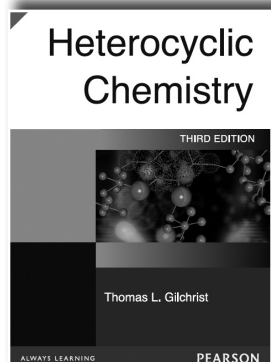
ABOUT THE BOOK

This popular text has been completely revised to reflect recent advances in the subject. Deals with the properties of ring systems and general methods of synthesis, providing a unique overview of the subject area. Includes a guide to the naming of the ring systems, invaluable to those unfamiliar with the area.

ISBN: 9788131707937

FEATURES

- Includes recent examples of organometallic reagents which are increasingly used in the synthesis and reactions of heterocyclic compounds.
- New reaction schemes illustrating the use of heterocycles as synthetic intermediates.

CONTENTS

1. Introduction
2. Aromatic Heterocycles
3. Nonaromatic Heterocycles
4. Methods of Ring Synthesis
5. Six-membered Rings
6. Five-membered Rings with One Heteroatom
7. Six-membered Rings with Two or More Heteroatoms
8. Five-membered Rings with Two or More Heteroatoms
9. Three and Four Membered Rings
10. Seven and Larger Membered Ring Compounds
11. Nomenclature

ABOUT THE AUTHOR

Thomas. L. Gilchrist, University of Liverpool
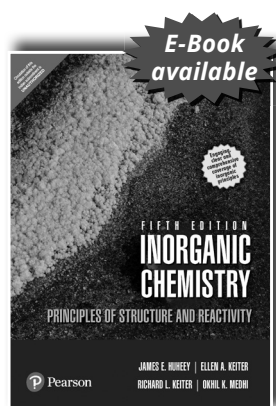
Inorganic Chemistry, 5/e

James E. Huheey | **Ellen A. Keiter** | **Richard L. Keiter** | **Okhil K. Medhi**

968 | © 2022

ABOUT THE BOOK

For nearly half a century, this impeccable text has been revered for its clear and precise explanations, thoughtfully chosen examples, superior illustrations and time-tested exercise sets. This classic in its field has been substantially revised and includes the latest findings in the discipline. Its user-friendly approach and straightforward slang, patterned on professional literature, gives students a comprehensive look at the discipline and introduces them to such exciting topics as bioinorganic chemistry and solid-state chemistry.

FEATURES

- Prepares students for current work in chemistry through its up-to-date, accurate coverage
- Rewritten chapters with new sections on hydrogen as an alternative fuel, environmental aspects of main group elements, metallic nanomaterials and much more
- Comprehensive coverage of bonding, solid state chemistry, organometallic chemistry and coordination chemistry
- Invaluable resource for students preparing for competitive examinations

CONTENTS

1. What is Inorganic Chemistry?
2. The Structure of the Atom
3. Symmetry and Group Theory
4. Ionic Bonding and the Solid State
5. The Covalent Bond
6. The Structure of Molecules and Stereochemical Nonrigidity
7. Chemical Forces
8. Acid-Base Chemistry
9. Chemistry in Aqueous and Nonaqueous Solvents
10. The Chemistry of the Main Group Elements: Periodicity
11. The Chemistry of the Main Group Elements: Inorganic Chains, Rings, and Cages
12. The Chemistry of the Main Group Elements: Halogens and the Noble Gases
13. Some Descriptive Chemistry of the Metals.
14. Coordination Chemistry: Bonding
15. Coordination Chemistry: Spectra and Magnetism
16. Coordination Chemistry: Structure, Isomerism, and Stability
17. Coordination Chemistry: Reactions, Kinetics, and Mechanisms
18. Organometallic Chemistry: Syntheses, Structure, and Bonding
19. Organometallic Chemistry: Reactivity and Catalysis
20. The Inorganic Chemistry of Biological Systems

Appendix A: The Literature of Inorganic Chemistry
Appendix B: Units and Conversion Factors
Appendix C: Atomic States and Term Symbols
Appendix D: Character Tables
Appendix E: Bond Energies and Bond Lengths.
Appendix F: An Overview of Standard Reduction Potentials of the Elements
Appendix G: Tanabe-Sugano Diagrams
Appendix H: Essential and Trace Elements in Biological Systems
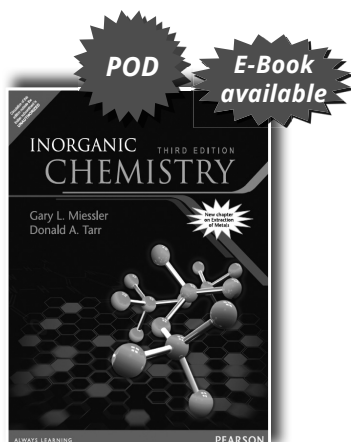Appendix I: IUPAC Recommendations on the Nomenclature of Inorganic Chemistry

ABOUT THE AUTHOR(S)

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Richard L. Keiter, Eastern Illinois University

Okhil K. Medhi Gauhati University

Inorganic Chemistry, 3/e

Gary Miessler | **Donald A. Tarr**

720 | © 2008

Web Supplements

ABOUT THE BOOK

This highly readable text provides the essentials of *Inorganic Chemistry* at a level that is neither too high (for novice students) nor too low (for advanced students). It has been praised for its coverage of theoretical inorganic chemistry. It discusses molecular symmetry earlier than other texts and builds on this foundation in later chapters. Plenty of supporting book references encourage instructors and students to further explore topics of interest.

FEATURES

- NEW - Coverage of oxidation-reduction reactions.
- NEW - Updated and reorganized material throughout Includes recent literature references.
- NEW - Web-based problems.
- NEW - Problems using software for molecular orbital calculations.
- Excellent, balanced coverage of core principles and theory.
- Integration of symmetry arguments throughout

- Emphasizes symmetry more than other inorganic texts.
- Many problems at the end of each chapter Including some from the recent literature.
- Worked examples in most chapters.
- Exercises in most chapters.
- Strong molecular symmetry/group theory coverage.
- Strong molecular-orbital approach.
- Special topic coverage e.g., organometallic, solid-state chemistry, bioinorganic, and environmental inorganic.

CONTENTS

1. Introduction to Inorganic Chemistry.
2. Atomic Structure.
3. Simple Bonding Theory.
4. Symmetry and Group Theory.
5. Molecular Orbitals.
6. Acid-Base and Donor-Acceptor Chemistry.
7. The Crystalline Solid State.
8. Chemistry of the Main Group Elements.
9. Coordination Chemistry I: Structures and Isomers.
10. Coordination Chemistry II: Bonding.
11. Coordination Chemistry III: Electronic Spectra.
12. Coordination Chemistry IV: Reactions and Mechanisms.
13. Organometallic Chemistry.
14. Organometallic Reactions and Catalysis.
15. Parallels Between Main Group and Organometallic Chemistry.
16. Bioinorganic and Environmental Chemistry.

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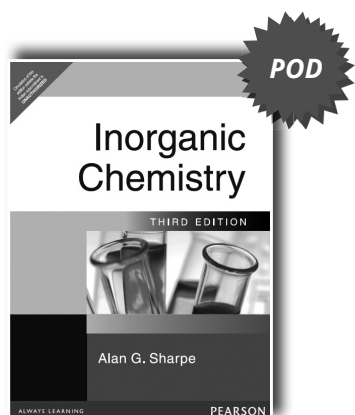
Inorganic Chemistry, 3/e

Alan G. Sharpe

702 | © 2006

ISBN: 9788131706992

ABOUT THE BOOK

The 3rd edition of *Inorganic Chemistry* provides an excellent introduction to the subject. The fully revised text takes account of important advances, and a new larger format provides accessibility. The exercises have been updated and new outline solutions have been added. In this edition, the author has increased emphasis on solid state chemistry and expanded the treatment of aqueous and non-aqueous solutions.
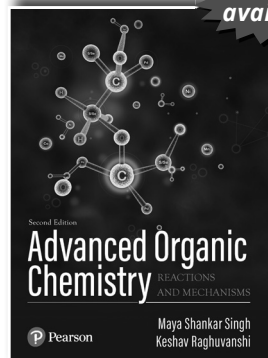
CONTENTS

E-Book available

Advanced Organic Chemistry: Reactions & Mechanisms, 2/e

Maya Shankar Singh | **Keshav Raghuvanshi**

696 | © 2021

ISBN: 9789354490781

ABOUT THE BOOK

Advanced Organic Chemistry – Reactions and Mechanisms, 2e – written in a simple and honest way this book is extremely pleasant to follow the language of chemistry via structures and equations. The book is developed to initiate fundamental ideas rather than on the sequential presentation of facts and is articulated with the two most important sorts of chemistry that exist—the chemistry that is known as life, and the chemistry as practiced by chemists solving real problems in laboratories. Each chapter contains only those topics and reactions that are needed to understand the intellectual roots of organic chemistry as it is currently practiced. All topics covered are either 'fundamental' or 'advanced'. Fundamental sections address the needs of upper-level undergraduates, while the advanced sections are intended for graduate-level/ senior audiences. The problems at the end of each chapter represent application of concepts to new structures and circumstances, rather than review of material explicitly presented in the text. These problems are designed in such a way that students can test themselves on the material just covered before proceeding to the next section. Chapters like theory, mechanism, synthesis, structure, and stereochemistry are discussed throughout the book in a qualitative to semi quantitative tone.

FEATURES

- It is written in an informal and honest way that makes it extremely pleasant to follow the language of chemistry via structures and equations
- Examples based on interesting/famous molecules or chemical problems are presented throughout the book
- Specific examples are included at each stage to illustrate the mechanism under discussion.
- Chemists present chemistry in terms of structural diagrams and for this reason all reactions have been drawn using curly arrows—the handwriting of chemistry
- A rich graphic design, which does a great job bringing some of the more abstract concepts of Organic Chemistry closer to the students.
- End of chapter summaries reinforce/ emphasize the student's comprehension of the key points.

CONTENTS

1. Introduction to Organic Chemistry
2. Delocalized Chemical Bonding and Electronic Effects
3. Concept of Acids and Bases
4. Alkyl Halides: Nucleophilic Substitution Reactions
5. Elimination Reactions
6. Alkenes and Alkynes: Addition Reactions
7. Free Radical Reactions
8. Pericyclic Reactions
9. Aromaticity
10. Aromatic Substitution
11. Buckminsterfullerene (Soccer Ball, Bucky Ball)
12. Stereochemistry
13. Asymmetric Synthesis
14. Molecular Rearrangements

ABOUT THE AUTHOR

Maya Shankar Singh (FNA, FASc, FNASc), JC Bose National Fellow, Department of Chemistry, Institute of Science, Banaras Hindu University, Varanasi, India

Keshav Raghuvanshi, Chemical and Biomolecular Engineering, North Carolina State University, Raleigh, NC 27695-7905, USA
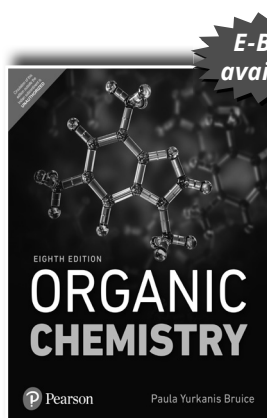
ISBN: 9789353948450

Organic Chemistry, 8/e

Paula Yurkanis Bruice

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Web Supplements

ABOUT THE BOOK

Paula Bruice's presentation in Organic Chemistry, Eighth Edition provides mixed-science majors with the conceptual foundations, chemical logic, and problem-solving skills they need to reason their way to solutions for diverse problems in synthetic organic chemistry, biochemistry, and medicine. The Eighth Edition builds a strong framework for thinking about organic chemistry by unifying principles of reactivity that students will apply throughout the course, discouraging memorization. With more applications than any other textbook, Dr. Bruice consistently relates structure and reactivity to what occurs in our own cells and reinforces the fundamental reason for all chemical reactions–electrophiles react with nucleophiles. New streamlined coverage of substitution and elimination, updated problem-solving strategies, synthesis skill-building applications and tutorials guide students throughout fundamental and complex content in both the first and second semesters of the course.

FEATURES

The textbook bridges The gap between organic chemistry and biochemistry. Because bioorganic chemistry is The bridge between organic chemistry and biochemistry, The text emphasizes that The organic reactions that chemists carry out in The laboratory are similar to those performed by nature inside a cell. These connections are especially important to biological science majors. -Revised, accuracy-checked text provides increased exam relevancy. -Improved visuals and organization engage students with difficult subject matter, organizes The chapter content and improves ease of use. -Strengthened emphasis on The strategies needed to solve problems and master The content. -New and restructured features give students additional conceptual and skill building support. -Organizing What We Know about The reactions of organic Compounds Table. -Content Updates and Revisions to The Table of Contents streamline and improve clarity in The presentation.

CONTENTS

Part 1: An Introduction to the Study of Organic Chemistry
1. Remembering General Chemistry: Electronic Structure and Bonding
2. Acids and Bases: Central to Understanding Organic Chemistry
3. An Introduction to Organic Compounds: Nomenclature, Physical Properties, and Structure

Part 2: Electrophilic Addition Reactions, Stereochemistry, and Electron Delocalization
4. Isomers: The Arrangement of Atoms in Space
5. Alkenes: Structure, Nomenclature, and an Introduction to Reactivity
   - Thermodynamics and Kinetics
6. The Reactions of Alkenes
   - The Stereochemistry of Addition Reactions
7. The Reactions of Alkynes
   - An Introduction to Multistep Synthesis
8. Delocalized Electrons: Their Effect on Stability, pKa, and the Products of a Reaction
   - Aromaticity and Electronic Effects: An Introduction the Reactions of Benzene

Part 3: Substitution and Elimination Reactions
9. Substitution and Elimination Reactions of Alkyl Halides
10. Reactions of Alcohols, Ethers, Epoxides, Amines, and Sulfur-Containing Compounds
11. Organometallic Compounds
12. Radicals

Part 4: Identification of Organic Compounds
13. Mass Spectrometry; Infrared Spectroscopy; and UV/Vis Spectroscopy
14. NMR Spectroscopy

Part 5: Carbonyl Compounds
15. Reactions of Carboxylic Acids and Carboxylic Acid Derivatives
16. Reactions of Aldehydes and Ketones
   - More Reactions of Carboxylic Acid Derivatives
17. Reactions at the a-Carbon

Part 6: Aromatic Compounds
18. Reactions of Benzene And Substituted Benzenes
19. More About Amines
   - Reactions of Heterocyclic Compounds

ABOUT THE AUTHOR

Paula Yurkanis Bruice is from the University Of California, Santa Barbara. Bruice earned her Ph.D. in chemistry from the University of Virginia. She then received an NIH postdoctoral fellowship for study in the Department of Biochemistry at the University of Virginia Medical School and held a postdoctoral appointment in the Department of Pharmacology at the Yale School of Medicine. Paula has been a member of the faculty at the University of California, Santa Barbara since 1972, where she has received the Associated Students Teacher of the Year Award, the Academic Senate Distinguished Teaching Award, two Mortar Board Professor of the Year Awards, and the UCSB Alumni Association Teaching Award. Her research interests center on the mechanism and catalysis of organic reactions, particularly those of biological significance.
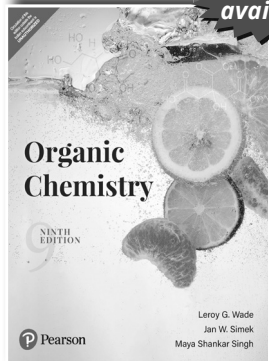
E-Book available

Organic Chemistry, 9/e

Leroy G. Wade, Jr. | **Jan William Simek** | **Maya Shankar Singh**

1578 | © 2020

Web Supplements

ISBN: 9789389342673

ABOUT THE BOOK

Organic Chemistry, Ninth Edition gives students a contemporary overview of organic principles and the tools for organizing and understanding reaction mechanisms and synthetic organic chemistry with unparalleled and highly refined pedagogy. This text presents key principles of organic chemistry in the context of fundamental reasoning and problem solving. Authored to complement how students use a textbook today, new Problem Solving Strategies, Partially Solved Problems, Visual Reaction Guides and Reaction Starbursts encourage students to use the text before class as a primary introduction to organic chemistry as well as a comprehensive study tool for working problems and/or preparing for exams.

FEATURES

- New chapters on Phenols and Quinones and Asymmetric Synthesis.
- Green Chemistry is emphasized with presentation of less-toxic, and environmentally friendly reagents.
- Enriched and updated treatment of Acid/Base Chemistry, Study of Chemical Reactions, Steriochemistry, Alkyl Halides, Alkenes, Dienes, Alkynes, Thiols, Aromatic Compounds, Amines, and Polymers.
- Over 100 new problems include more synthesis problems and problems based on recent literature.
- Over 80 Mechanism boxes help students understand how specific reactions occur by zooming in on each individual step in detail.
- Updated art throughout to provide consistency and clarity in the text, giving detailed representations of molecular and orbital art.

CONTENTS

1. Introduction to Organic Chemistry
2. Structure and Properties of Organic Molecules: Acids and Bases
3. The Study of Chemical Reactions
4. Structure and Stereochemistry of Alkanes and Cycloalkanes
5. Structure and Synthesis of Alkenes
6. Reactions of Alkenes and Dienes
7. Alkynes
8. Alkyl Halides; Nucleophilic Substitution and Elimination
9. Alcohols and Thiols: Structure and Synthesis
10. Reactions of Alcohols
11. Ethers and Thioethers
12. Stereochemistry
13. Aromatic Compounds
14. Reactions of Aromatic Compounds
15. Ketones and Aldehydes
16. Carboxylic Acids
17. Carboxylic Acid Derivatives
18. Condensations and Alpha Substitutions of Carbonyl Compounds
19. Phenols and Quinones
20. Amines
21. Carbohydrates
22. Amino Acids, Peptides, Proteins and Nucleic Acids
23. Polymeric Materials
24. Asymmetric Synthesis
25. Conjugated Systems, Orbital Symmetry, and Ultraviolet Spectroscopy
26. Infrared Spectroscopy and Mass Spectrometry
27. Nuclear Magnetic Resonance Spectroscopy
28. Lipids
    Appendices
    Brief Answers to Selected Problems
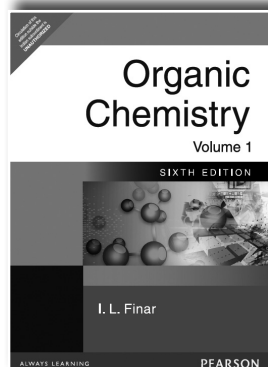   Photo Credits
    Index
    Color Illustrations

ABOUT THE AUTHOR(S)

Leroy G. Wade, Whitman College
Jan W. Simek, Cal Poly State University
Maya Shankar Singh, Department of Chemistry, Institute of Science, Banaras Hindu University

Organic Chemistry, Volume 1, 6/e

✎ **I. L. Finar**

▢ **966** | © **2005**

ABOUT THE BOOK
In the sixth edition of Dr. Finar's best-selling student text, a great deal of material has been rewritten and many new topics have been added. The arrangement of the subject matter is based on homologous series and SI units have been used throughout the text.

CONTENTS
1. Determination of Structure
2. Properties of Molecules
3. Alkanes
4. Alkenes and Alkynes
5. Halogen derivatives of the alkanes
6. Monohydric alcohols
7. Ethers
8. Aldehydes and ketones
9. Saturated monocarboxylic acids and their derivatives
10. Polycarbonyl compounds
11. Polyhydric alcohols
12. Unsaturated alcohols, ethers, carbonyl compounds and acids
13. Nitrogen compounds
14. Aliphatic compounds of sulphur, phosphorus, silicon and boron
15. Organometallic compounds
16. Saturated dicarboxylic acids
17. Hydroxyacids, stereochemistry, unsaturated dicarboxylic acids
18. Carbohydrates
19. Alicyclic compounds
20. Monocyclic aromatic hydrocarbons
21. Aromatic halogen compounds
22. Aromatic nitro-compounds
23. Aromatic amino-compounds
24. Diazonium salts and their related compounds
25. Aromatic sulphonic acids
26. Phemols and quinones
27. Aromatic alcohols, aldehydes and ketones
28. Aromatic acids
29. Polynuclear hydrocarbons and their derivatives
30. Heterocyclic compounds
31. Dyes and photochemistry

ABOUT THE AUTHOR
The late **Dr. Finar** was Principal Lecturer in Organic Chemistry at the Polytechnic of North London.
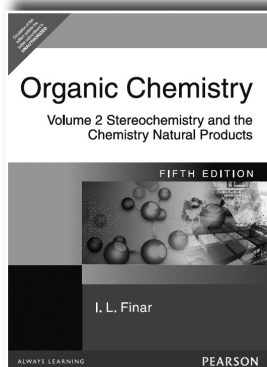
Organic Chemistry, Volume 2: Stereochemistry and the Chemistry Natural Products, 5/e

✎ **I. L. Finar**

📄 **956** | © **2005**

ABOUT THE BOOK
Organic Chemistry is a well-established two-volume textbook for students studying chemistry at degree level. Volume 2 carries the material of Volume 1: Fundamental Principles to a more advanced level. The author provides a comprehensive introduction to the relationship between physical properties and chemical structures, and then proceeds to a detailed account of stereochemistry. The later chapters are devoted to the most typical compounds of natural products and the problems involved. A selected number of reading references are given at the end of each chapter.

CONTENTS
1. Physical properties and chemical constitution
2. Optical isomerism
3. Nucleophilic substitution at a saturated carbon atom, asymmetric synthesis
4. Geometrical isomerism, stereochemistry of alicyclic compounds
5. Stereochemistry of biphenyl compounds
6. Stereochemistry of some elements other than carbon
7. Carbohydrates
8. Terpenoids
9. Carotenoids
10. Polycyclic aromatic hydrocarbons
11. Steroids
12. Heterocyclic compounds containing two or more hetero-atoms
13. Amino-acids and proteins
14. Alkaloids
15. Anthocyanins
16. Purines and nucleic acids
17. Vitamins
18. Chemotherapy
19. Haemoglobin, chlorophyll and phthalocyanines

ABOUT THE AUTHOR
The late **Dr. Finar** was Principal Lecturer in Organic Chemistry at the Polytechnic of North London.

POD
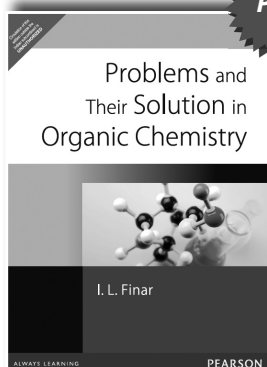
Problems and Their Solution in Organic Chemistry

✎ **I. L. Finar**

📄 **360** | © **2006**
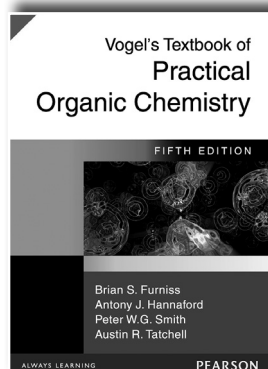
ABOUT THE BOOK
The first part of this book collects together the questions set out at end of each chapter in the authors Textbook of Organic Chemistry, Volume 1 (sixth edition). The second part of this book gives the possible solutions, which are linked with an explanation of the sort of reasoning used in order to arrive at one of the answers. In many cases, several answers are given for one question; and in each set of questions, there is at least one which involves the completion of equations. The result is a book which can be used independently of the main volume. This book helps in acquiring a better understanding of the basic principles of organic chemistry and in revising a large amount of the subject matter quickly.

CONTENTS

ABOUT THE AUTHOR

The late **Dr. Finar** was Principal Lecturer in Organic Chemistry at the Polytechnic of North London.

Vogel's Textbook of Practical Organic Chemistry, 5/e

Brian S. Furniss | **Antony J. Hannaford** | **Peter W.G. Smith** | **Austin R. Tatchell**

1544 | © 2006

ABOUT THE BOOK

Still recognized as the definitive text on practical topics related to organic chemistry, this text is relied upon by undergraduates, postgraduate students, and professional organic chemists. Topics covered include the structural and theoretical principles required when designing a synthesis; the disconnection or synthon approach; the principles of retrosynthetic analysis applied to relevant aliphatic, aromatic, alicyclic and heterocyclic compounds; and developments in reaction techniques.

FEATURES

- An introductory chapter on the structural and theoretical principles required when designing a synthesis.
- The disconnection on synthon approach now integrated into the text , and the principles of retrosynthetic analysis applied to relevant aliphatic, aromatic, alicyclic and heterocyclic compounds.
- Synthesis methodology is expanded to cover a range of new reagents, including oxidants and reductants; reagents for asymmetric synthesis; and those derived from lithium, boron, silicon, phosphorous and suphur.
- Recent developments in reaction techniques which include: handling of air-sensitive and moisture-sensitive compounds; new chromatographic procedures; phase transfer catalysis; and solid support reagents.
- Over 100 new experiments selected from the literature to illustrate new reagents and techniques, and the operation of protection, selectivity and control in synthesis.
- A more detailed treatment of carbon-13 n.m.r. spectroscopy, and the interpretation of spectroscopic data for many of synthesized compounds.

CONTENTS

1. Organic Synthesis.
2. Experimental Techniques.
3. Spectroscopic Methods and the Interpretation of Spectra.
4. Solvents and Reagents.
5. Aliphatic Compounds.
6. Aromatic Compounds.
7. Selected Alicyclic Compounds.
8. Selected Heterocyclic Compounds.
9. Investigation and Characterization of Organic Compounds.
10. Physical Constants of Organic Compounds.
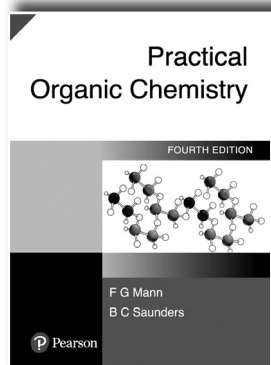
ISBN: 9788131727102

# Practical Organic Chemistry

F.G. Mann | B.C. Saunders

600 | © 2009

ABOUT THE BOOK

This book has proved useful for research as well as for teaching purpose The fourth edition of this book was distinguished from its predecessors by a greater emphasis on semi-micro methods and modern techniques and reactions. While updating the book in several important aspects, namely, chromatography, reaction mechanism, and safety and first-aid measures.

CONTENTS

Part I: Methods and Manipulation
Part II: Preparations
Part III: Reactions and Identification of Organic Compounds
Part IV: Quantitative Analysis
Part V: Simple Enzyme Reactions

E-Book available
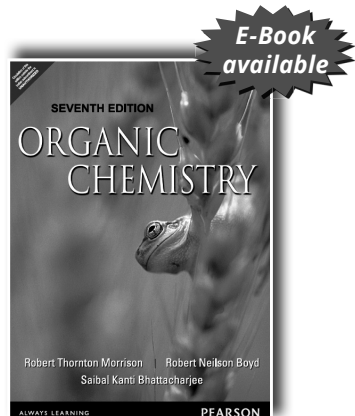
ISBN: 9788131704813

Organic Chemistry, 7/e

Robert Thornton Morrison | Robert Neilson Boyd | Saibal Kanti Bhattacharjee

1508 | © 2010

Web Supplements

ABOUT THE BOOK

As in the earlier editions, the book conveys the important fundamentals and principles of the subject in a simple and easily understandable manner.

CONTENTS

Part 1: Fundamentals of Organic Chemistry
1. Structures of Organic Compounds
2. Structural Theory
3. Symmetry of Organic Molecules (Molecular Dissymmetry)
4. Types of Reactions of Organic Compounds
5. Alkanes, Cycloalkanes and Aromatic Hydrocarbons

ABOUT THE AUTHOR(S)
Robert Thornton Morrison, New York University
Robert Neilson Boyd, New York University
Saibal Kanti Bhattacharjee, Gauhati University
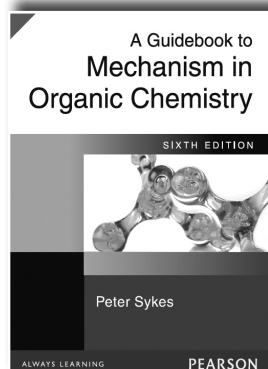
A Guidebook to Mechanism in Organic Chemistry, 6/e

✒ **Peter Sykes**

📄 **428** | © **2005**

ISBN: 9788177584332

ABOUT THE BOOK
This classic textbook on mechanistic organic chemistry, characterized by its clarity, careful choice of examples, and its general approach designed to lead to a greater understanding of the subject matter. The book is aimed clearly at the needs of the student, with a thorough understanding of, and provision for, the potential conceptual diffculties he or she is likely to encounter. The book's success in achieving these goals is reflected in the opinion of one reviewer who says, "Sykes remains the bible of mechanistic organic chemistry for thousands of undergraduates, and there is certainly no English language publication of which I am aware which comes even close to challenging it in terms of clarity and coverage."

FEATURES
■ New – topics introduced in this edition : ipso aromatic substitution; the mechanistic borderline in nucleophilic substitution; more use of activation parameters; Dimorth's ET parameter; Hammett's Ã³x and spectroscopic data; and 13C n.m.r. in biogenesis.
■ New – thoroughly revised text with improved explanations, more examples and increased clarity.

➡

CONTENTS

POD

Elementary Practical Organic Chemistry
Small Scale Preparations
SECOND EDITION

1
PART
Arthur I. Vogel

P Pearson
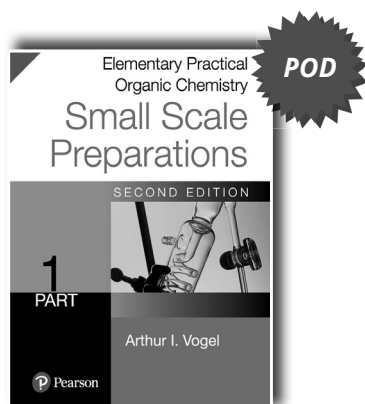
ISBN: 9788131756867

Elementary Practical Organic Chemistry: Small Scale Preparations Part 1, 2/e

✒ **Arthur I. Vogel**

📄 **456** | © **2010**

FEATURES
- Experimental Techniques
- Mechanism of all reactions described
- Introduction of a number of reactions and experimental procedures of general interest

CONTENTS
1. Theory of General Technique
2. Experimental Technique
3. Aliphatic Compounds
4. Aromatic Compounds
5. Miscellaneous Compounds and Miscellaneous Reactions

POD

Elementary Practical Organic Chemistry
Qualitative Organic Analysis
SECOND EDITION

2
PART
Arthur I. Vogel

ALWAYS LEARNING   PEARSON
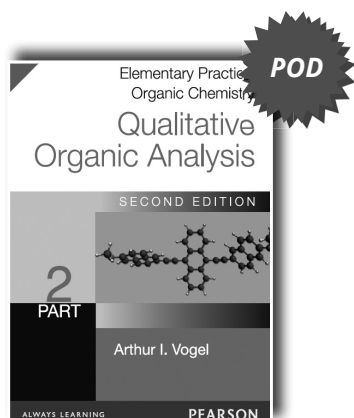
ISBN: 9788131756874

Elementary Practical Organic Chemistry: Qualitative Organic Analysis Part 2, 2/e

✒ **Arthur I. Vogel**

📄 **448** | © **2010**

ABOUT THE BOOK
A dedicated chapter on "The use of spectroscopic methods in qualitative organic analysis" which includes the essentials from a practical viewpoint of ultraviolet and visible spectroscopy and infrared spectroscopy and mass spectroscopy. These spectroscopy techniques are now-days of such great importance that no book on qualitative organic analysis can be regarded complete without their inclusion.

CONTENTS
1. Determination of physical constants
2. Qualitative analysis for the elements
3. The solubility classes

4. Reactions and characterization of selected classes of organic compounds
5. Class reactions
6. The preparation of derivatives
7. Qualitative analysis of mixtures of organic compounds
8. The use of spectroscopic methods in qualitative organic analysis
9. Physical constants of organic compounds

ISBN: 9788131756881

Elementary Practical Organic Chemistry: Quantitative Organic Analysis Part 3, 2/e

✎ **Arthur I. Vogel**

📄 **382** | © **2010**

FEATURES
■ Numerous Experiments
■ Coverage of quantitative organic analysis through the medium of functional groups

CONTENTS
1. Determination of selected elements in organic compounds
2. General discussion of titrations in non-aqueous solvents
3. Hydroxyl groups (Alcohols)
4. Adjacent hydroxyl groups
5. Hydroxyl groups (Phenols)
6. Amino groups
7. Salts of amines
8. Amino acids
9. Carboxyl groups
10. Salts of carboxylic acids
11. Anhydrides of carboxylic acids
12. Esters of carboxylic acids
13. Aldehydes and ketones
14. Carbohydrates (Sugars)
15. Nitro, Nitrsos and azo groups
16. Unsaturation
17. Alkoxyl groups
18. C-Methyl, O-acetyl and N-acetyl groups
19. Active Hydrogen
20. Enols
21. Imides
22. Sulphonamides, Thiols, Sulphides and disulphides
23. Determination using ION exchange resins
24. Some application of the karl fischer reagent
25. Alpha-epoxy groups
26. Miscellaneous determinations

Organic Chemistry, Vol 1, 6/e (Bangla)

✎ **I. L. Finnar**

📄 **375** | © **2016**
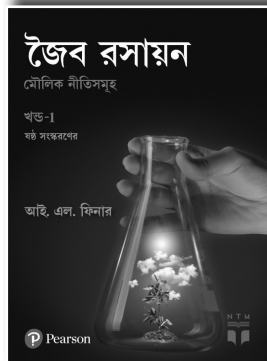
ABOUT THE BOOK
L. Finar dwara likhit Carbanik Rasayan Vigyan, vol.1-mulbhut sidhant ko yadi aapni bhasa mein pada jaye to esse aachi bat ho hi nahin sakti. Hamari sikhsan pranali mein sabse badi kami yah hai ki aaj bhi vigyan ewm takniki vishyo ko padhane ewm samjhane ke liye English ka hi prayog kiya jata hai, parinamsawarup vidhyarthi ucch aank prapt karne ki aakanksha mein Vishay ki mul avdharnaoo ko samjhne ke bajay unko ratne hetu badhya ho jate hai.

CONTENT
Preface
Sanrachna ka Nirdharan
1. Anuoo ke Gun
2. Elken
3. Elkin ewm Elkaien
4. Elkeno ke Helojan byutpann
5. Monohaedik Elkohal
6. Ethar
7. Eledhaid ewm kiton
8. Santript Monokarbocsilik aaml ewm unke byutpann
9. Bahukarbonil Yogik
10. Polyhaidik Elkohal
11. Asantript Elkohal, Ethar, Carbonil yogik ewm Aaml
12. Naitrozen yukt Yogik
13. Salfar , Fasforas, Silican ewm Boron ke Elifatik yogik
14. Carbdhatvik Yogik
15. Sanstript Daecarbocsilik Aaml
16. Haidocsi Aaml, Trivim Rasayan Sastra tha Asanstript Aaml
17. Carbohaidets
18. Elisaeclik yogik
19. Ekalchakriya erometik haydrocarbons
20. Erometic Hellogen Yogic
21. Erometic Naetro Yogic
22. Erometic emino Yogic
23. Daeyejoniyam lavan ewm unse sambandhit Yogic
24. Erometic Salfonik Aaml
25. Finaols ewm cvinons
26. Erometic Elcohals, Eldihaeds ewm kitons
27. Erometic Aaml
28. Bahunabhikiy Haydrocarban ewm unke byutpann
29. Vishamchakriya Yogik
30. Ranjak ewm Prakashiy Rasayan Sashtra
31. Parisist
32. Anukramnik
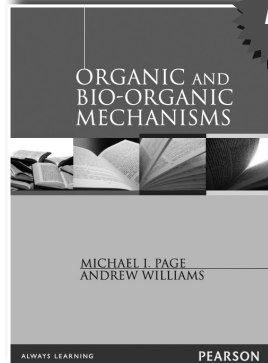
Organic and Bio-Organic Mechanisms

✒ **Michael I. Page** | **Andrew Williams**

📄 **312** | © **2009**

ISBN: 9788131729496

ABOUT THE BOOK
This text provides a comprehensive and detailed discussion of the investigation of organic and bioorganic reaction mechanisms. It addresses questions such as: 'How are bonds between atoms rearranged?', 'What sort of structural changes take place to cause bond fission and formation?' and 'How do catalysts lower the activation energies of reactions?'
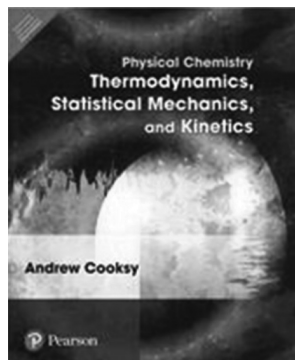
**Physical Chemistry
Thermodynamics, Statistical Mechanics, and Kinetics**

✎ **Andrew Cooksy**

📄 **576** | © **2018**

ISBN: 9789353063627

ABOUT THE BOOK

Andrew Cooksy's clear teaching voice help students connect immediately with the subject matter while defusing some of their initial trepidation about physical chemistry. Through lively narrative and meticulous explanations of mathematical derivations, Physical Chemistry: Thermodynamics, Statistical Mechanics, and Kinetics engages students while fostering a sincere appreciation for the interrelationship between the theoretical and mathematical reasoning that underlies the study of physical chemistry. The author's engaging presentation style and careful explanations make even the most sophisticated concepts and mathematical details clear and comprehensible.

FEATURES

- ■ FLEXIBLE ORGANIZATION ACCOMMODATES THE CONTENT NEEDS AND TEACHING STYLES OF EACH SEMESTER/QUARTER SEQUENCE.
  Separation of Quantum Chemistry and Thermodynamics into distinct volumes provides the utmost in flexibility, allowing instructors to lead with their choice of Quantum-first or Thermo-first coverage.
- ■ Reflective of popular lecture strategies, chapter opening and closing features ground each topic within the larger framework of physical chemistry and help students stay oriented as they deepen their understanding.
- ■ Opening features including a "Visual Roadmap" and "Context: Where Are We Now" show readers where they are within the text and relative to other physical chemistry topics.
- ■ "Goal: Why Are We Here?" and "Learning Objectives" features prepare students for the work ahead and outline the skills students should expect to acquire from their study of the chapter.
- ■ The concluding "Where Do We Go From Here" section at the end of each chapter reinforces student orientation and illuminates the intrinsic connection between concepts."

CONTENTS

Physical Chemistry at the Macroscopic Scale:

Statistical Mechanics, Thermodynamics, and Kinetics

A Introduction: Tools from Math and Physics

A.1 Mathematics

A.2 Classical Physics

I Extrapolation to Macroscopic Systems
1. Introduction to Statistical Mechanics: Building Up to the Bulk
2. Partitioning the Energy
3. Statistical Mechanics and Molecular Interactions
4. Mass Transport
5. Energy transport

II Non-Reactive Macroscopic Systems
6. 6 Introduction to Thermodynamics

7. Energy and Enthalpy
8. Entropy
9. Phase Transitions and Phase Equilibrium
10. Solutions

III Reactive Systems
11. Chemical Thermodynamics
12. Elementary Reactions
13. Multi-step Reactions
14. Reaction Networks

ABOUT THE AUTHOR

Andrew Cooksy is a chemistry professor at San Diego State University, where he teaches courses in physical and general chemistry and carries out research on the spectroscopy, kinetics, and computational chemistry of reactive intermediates in combustion and interstellar processes. He attended the Washington, D.C. public schools before receiving his undergraduate degree in chemistry and physics from Harvard College and his Ph.D. in chemistry from the University of California at Berkeley.

Chemical Kinetics, 3/e
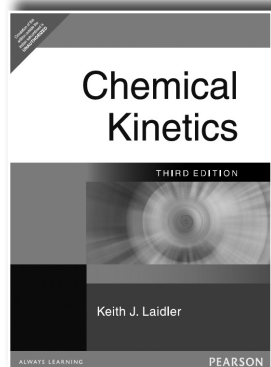
Keith J. Laidler

544 | © **2007**

ABOUT THE BOOK
Basic concepts of both experimental and theoretical chemical kinetics are concisely explained for those seeking a general knowledge of the subject from this well-known text, now being totally revised and updated. In addition, the book is an invaluable starting point for those embarking on research in kinetics and physical chemistry. Extensive chapter bibliographies point the way toward more detailed accounts or specialized aspects. Historical background included in both chapter introductions and biographical sketches of important researches in chemical kinetics.

FEATURES
- An invaluable starting point for those embarking on research in kinetics and physical chemistry.
- Extensive chapter bibliographies point the way toward more detailed accounts or specialized aspects.
- Historical background included in both chapter introductions and biographical sketches of important researchers in chemical kinetics.

CONTENTS
1. Basic Kinetic Concepts.
2. Analysis of Kinetic Results.
3. Energy of Activation.
4. Theories of Reaction Rates.
5. Elementary Gas-Phase Reactions.
6. Elementary Reactions in Solution.
7. Reactions on Surfaces.
8. Composite Reactions.
9. Photochemical and Radiation-Chemical Reactions.
10. Homogeneous Catalysis.
11. Isotope Effects.
12. Reaction Dynamics.

ISBN: 9788131709726

Seventh Edition

Quantum CHEMISTRY

Ira N. Levine

ALWAYS LEARNING   PEARSON
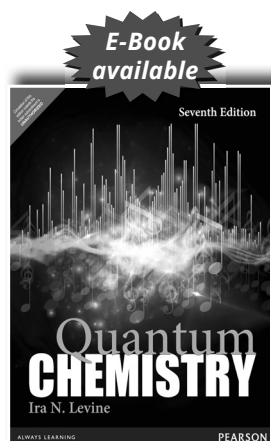
Quantum Chemistry, 7/e

Ira N. Levine

720 | © 2016

Web Supplements

ABOUT THE BOOK
This classic text on quantum chemistry has been extensively updated to include the latest research and developments in the field. With its solid presentation of mathematics, this bestseller provides a great introduction to the fundamentals of quantum chemistry and
the math needed to master it.

The seventh edition covers quantum mechanics, atomic structure, and molecular electronic structure and clearly demonstrates the usefulness and limitations of current quantum-mechanical methods for the calculation of molecular properties.

FEATURES
- In-depth treatment of quantum chemistry
- Derivations are presented in full, step-by-step detail
- Comprehensive discussions of the major computational methods of molecular electronic structure (Hartree—Fock, CI, density-functional theory, MP2, coupled cluster, semiempirical, molecular mechanics) are provided.

CONTENTS

ABOUT THE AUTHOR
Ira N. Levine is faculty, Brooklyn College, City University of New York.

Chemical Thermodynamics: Classical, Statistical and Irreversible
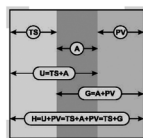
J. Rajaram | J. C. Kuriacose

696 | © **2013**

ISBN: 9788131792155

ABOUT THE BOOK
Aimed at providing undergraduate and postgraduate students with an understanding of thermodynamics, this book brings out the thermodynamic interrelationships in a succinct break-down of its essential elements. It starts with the fundamentals and progresses to advanced concepts to enable students to appreciate the application of thermodynamics in different areas of chemistry. Conforming to the syllabus framed by the U.G.C. curriculum, this course textbook is written in a simple and lucid language, the discussion and explanations being interspersed with appropriate worked-out examples. Every chapter is accompanied by adequate end-of-chapter exercises.

FEATURES
- Covers all introductory concepts in detail with a rich pedagogy for easy understanding
- Clear explanation of important concepts such as partial molar properties, fugacity and activity
- Over 140 solved examples and 100 end-of-chapter exercises

CONTENTS
1. Introduction
2. The first law of thermodynamics
3. Thermochemistry
4. The second law of thermodynamics
5. Free energy and work function
6. The third law of thermodynamics
7. Statistical thermodynamics
8. Partial molar properties
9. Phase equilibria
10. Fugacity and activity
11. Chemical Equlibrium
12. Aqueous solutions of electrolytes

ABOUT THE AUTHOR(S)
J. Rajaram and **J. C. Kuriacose** are retired professors of the department of chemistry, Indian Institute of Technology, Madras, Chennai, having devoted over thirty years to teaching chemistry.

VOGEL'S

TEXTBOOK OF
QUANTITATIVE CHEMICAL ANALYSIS

6

J MENDHAM | R C DENNEY
J D BARNES | M THOMAS
B SIVASANKAR

ALWAYS LEARNING   PEARSON
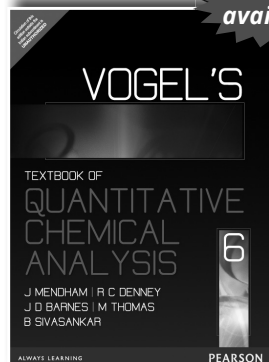
Vogel's Quantitative Chemical Analysis, 6/e

J. Mendham | David J. Barnes | R.C. Denney | M. J. K. Thomas

836 | © 2009

ABOUT THE BOOK

Dr. Vogel's classic introduction to analytical methods has provided generations of chemists worldwide with a basis for teaching, learning and applying analytical chemistry. This 60th anniversary edition - the first for a decade - reflects major changes in the subject. Analysts need to understand the concepts behind methods and *Vogel's Quantitative Chemical Analysis* provides clear introductions to all the key analytical methods including those involving advanced computerised equipment available in many analytical laboratories. The editors have built further on the work of Dr Vogel, modernising the approach while retaining the analytical concepts and ideas which were built into the original work. This new edition has been extensively revised to take into account developments in instrumental procedures and coupled techniques whilst maintaining the book's focus on quantitative chemical and problem-specific analyses. With excellent cross-referencing this book provides a wealth of examples and tables of data.

FEATURES

- Comprehensive coverage of methods with detailed easy-to-follow practical experiments.
- Basic analytical theory which is essential for understanding the subject.
- Greatly expanded sections on instrumental analysis including aspects of miniaturisation.
- Increased emphasis on minor/trace component analysis and revised statistical handling of data.
- New chapters on sampling, mass spectrometry and nuclear magnetic resonance.

CONTENTS

1. Preface to First Edition.
2. Preface to Sixth Edition.
3. Safety; Units.
4. Reagent Purity.
5. Introduction.
6. Fundamental Theoretical Principles of Reactions in Solution.
7. Common Apparatus & Basic Techniques.
8. Statistics, Introduction to Chemometrics.
9. Sampling.
10. The Basis of Separative Methods.
11. Thin Layer Chromatography.
12. Liquid Chromatography.
13. Gas Chromatography.
14. Titrimetric Analysis.
15. Gravimetric Analysis.
16. Thermal Analysis.
17. Direct Electroanalytical Methods.
18. Nuclear Magnetic Resonance Spectroscopy.
19. Atomic Absorption Spectroscopy.
20. Atomic Emission Spectroscopy.
21. Molecular Electronic Spectroscopy.
22. Vibrational Spectroscopy.
23. Mass Spectrometry

ABOUT THE AUTHOR(S)

J. Mendham, Consultant Analytical Chemist
R.C. Denney, Consultant Forensic Scientist
J. D. Barnes, University of Greenwich
M.J.K. Thomas, University of Greenwich

7th Edition

VOGEL'S
QUALITATIVE INORGANIC ANALYSIS
G. Svehla | B. Sivasankar

ALWAYS LEARNING   PEARSON

ISBN: 9788131773710

Vogel's Qualitative Inorganic Analysis, 7/e

✎ **G. Svehla** | **B. Sivasankar**

📄 **384** | © **2013**

ABOUT THE BOOK
Vogel's Qualitative Inorganic Analysis (in its seventh edition) follows the current trends and techniques in the field of analytical chemistry. Written for undergraduate and postgraduate students of chemistry, this revised and updated edition treats each concept and principle systematically to make the subject comprehensible to beginners as well as advanced learners.

FEATURES
■ Updated nomenclature
■ Addition of tests for metals based on flame atomic emission and atomic absorption spectrometry
■ New classification of mixtures of common and less common ions
■ Marginalia highlighting important facts
■ Elaborate discussions on preliminary tests, dissolution and fusion of samples
■ Health and hazard warnings throughout the text
■ Details on the preparation of reagents provided in the appendix

CONTENTS
1. Introduction
2. Experimental Techniques
3. Reactions of the Cations
4. Reactions of the Anions
5. Selected Tests and Separations
6. Reactions of Some Less Common Ions

ABOUT THE AUTHOR(S)
G. Svehla is a formerly professor from the department of chemistry, University College, York, Ireland.
B. Sivasankar is a visiting professor from the department of chemistry, Anna University, Chennai, Tamilnadu.

- -

ESSENTIALS OF ANALYTICAL CHEMISTRY

Pearson   SHOBA RAMAKRISHNAN
                 BANANI MUKHOPADHYAY

ISBN: 9789332545076

Essentials of Analytical Chemistry

✎ **Shobha Ramakrishnan** | **Banani Mukhopadhyay**

📄 **400** | © **2018**

ABOUT THE BOOK
The book elucidates the principles of analytical methods such as volumetric analysis, gravimetric analysis, statistical methods of analysis, electro-analytical, and thermoanalytical techniques. It also presents the basic principles and instrumentation of UV, IR, NMR, Mass and ESR spectral methods, accompanied by a discussion on the spectra of a number of molecules, intended to develop the skill of the reader and to interpret the spectra of common organic molecules. This text will benefit those preparing for competitive examinations such as NET, SLET, GATE, and the UPSC Civil Services exam.
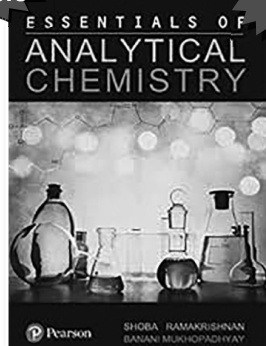
FEATURES
■ Includes up-to-date developments in the field
■ Detailed illustration of AES, AAS, and Flame Photometry
■ Numerous review questions, solved problems and end of chapter exercises:

CONTENTS
Preface
Acknowledgements
About the Authors

UNIT I Statistical Methods of Analysis
1. Errors in Chemical Analysis and Statistical Data Treatment

UNIT II Quantitative Analysis
2. Volumetric (Titrimetric) Analysis
3. Gravimetric Analysis

UNIT III Thermal Methods of Analysis
4. Thermogravimetric Analysis
5. Differential Thermal Analysis
6. Thermometric Titration

UNIT IV Electroanalytical Techniques

7. Electrogravimetry
8. Polarography

UNIT V Atomic Spectroscopy
9. Atomic Emission Spectroscopy
10. Flame Emission Spectroscopy or Flame Photometry
11. Atomic Absorption Spectroscopy

UNIT VI Molecular Spectroscopy
12. Ultraviolet and Visible Spectroscopy
13. Infrared Absorption Spectroscopy
14. Nuclear Magnetic Resonance (NMR) Spectroscopy
15. Electron Spin Resonance Spectroscopy

UNIT VII Mass Spectrometry
16. Mass Spectrometry
Bibliography
Index

ABOUT THE AUTHOR(S)
Shoba Ramakrishnan was Former Professor and Head, Department of Chemistry, Women's Christian College, Chennai, Tamil Nadu.
Banani Mukhopadhyay is Assistant Professor, Department of Chemistry, Women's Christian College, Chennai, Tamil Nadu.

ISBN	Author(s)	Title	Price	Page
9789353948450	Bruice	Organic Chemistry, 8/e	1340	8
9789353063627	Cooksy	Physical Chemistry Thermodynamics, Statistical Mechanics, and Kinetics	750	20
9788177585421	Finar	Organic Chemistry, Volume 1, 6/e	1280	11
9788177585414	Finar	Organic Chemistry, Volume 2: Stereochemistry and the Chemistry Natural Products, 5/e	1260	12
9788131700938	Finar	Problems and Their Solution in Organic Chemistry	1060	12
9789332546974	Finnar	Organic Chemistry, Vol 1, 6/e (Bangla)	430	18
9788177589573	Furniss / Hannaford / Smith / Tatchell	Vogel's Textbook of Practical Organic Chemistry, 5/e	1720	13
9788131707937	Gilchrist	Heterocyclic Chemistry, 3/e	1020	3
9789356064485	Huheey / Keiter / Keiter / Medhi	Inorganic Chemistry, 5e	1110	4
9788131709726	Laidler	Chemical Kinetics, 3/e	1080	21
9789332558533	Levine	Quantum Chemistry, 7/e	1050	22
9788131727102	Mann / Saunders	Practical Organic Chemistry	910	14
9788131723258	Mendham / Barnes / Denney / Thomas	Vogel's Quantitative Chemical Analysis, 6/e	1180	24
9788131718858	Miessler / Tarr	Inorganic Chemistry, 3/e	1130	5
9788131704813	Morrison / Boyd / Bhattacharjee	Organic Chemistry, 7/e	1180	14
9788131729496	Page / Williams	Organic and Bio-Organic Mechanisms	960	19
9788131792155	Rajaram / Kuriacose	Chemical Thermodynamics: Classical, Statistical and Irreversible	600	23
9789332545076	Ramakrishnan / Mukhopadhyay	Essentials of Analytical Chemistry	720	25
9789356063419	Robinson / McMurry	Chemistry, 8e	1330	1
9788131706992	Sharpe	Inorganic Chemistry, 3/e	1450	6
9789354490781	Singh / Raghuvanshi	Advanced Organic Chemistry: Reactions & Mechanics, 2e	1080	7

* Prices are subject to change without prior notice

ISBN	Author(s)	Title	Price	Page
9788131773710	Svehla / Sivasankar	Vogel's Qualitative Inorganic Analysis, 7/e	800	25
9788177584332	Sykes	A Guidebook to Mechanism in Organic Chemistry, 6/e	860	15
9789353438753	Timberlake	Basic Chemistry, 5/e	1190	2
9788131756867	Vogel	Elementary Practical Organic Chemistry: Small Scale Preparations Part 1, 2/e	960	16
9788131756874	Vogel	Elementary Practical Organic Chemistry: Qualitative Organic Analysis Part 2, 2/e	960	16
9788131756881	Vogel	Elementary Practical Organic Chemistry: Quantitative Organic Analysis Part 3, 2/e	960	17
9789389342673	Wade, Jr. / Simek / Singh	Organic Chemistry, 9/e	1860	10

Bioscience and Geology

CONTENTS

AGRICULTURE

BIOLOGY

BIOTECHNOLOGY

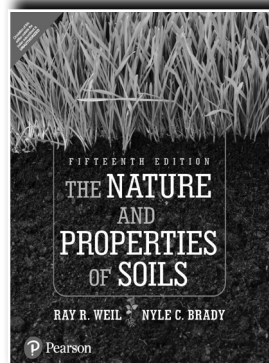## GEOLOGY & EARTH SCIENCE

Agriculture

The Nature and Properties of Soils, 15/e

✎ **Raymond R. Weil** | **Nyle C. Brady**

📄 **1172** | © **2022**

ISBN: 9789356062719

ABOUT THE BOOK

The Nature and Properties of Soils is designed to engage today's students with the latest in the world of soils. This hallmark text introduces students to the exciting world of soils through clear writing, strong pedagogy, and an ecological approach that effectively explains the fundamentals of soil science. Worked calculations, vignettes, and current real-world applications prepare readers to understand concepts, solve problems, and think critically. Written for both majors and non-majors, this text highlights the many interactions between the soil and other components of forest, range, agricultural, wetland and constructed ecosystems.

FEATURES

- A comprehensive approach to soils with a focus on six major ecological roles of soil including growth of plants, climate change, recycling function, biodiversity, water, and soil properties and behavior.
- Updated with the latest advances, concepts, and applications including hundreds of key references.
- New coverage of cutting-edge soil science. Examples include coverage of the pedosphere concept, new insights into humus and soil carbon accumulation, subaqueous soils, soil effects on human health, principles and practice of organic farming, urban and human engineered soils, new understandings of the nitrogen cycle, water-saving irrigation techniques, hydraulic redistribution, soil food-web ecology, disease suppressive soils, soil microbial genomics, soil interactions with global climate change, digital soil maps, and many others
- New applications boxes and case study vignettes. A total of 10 new application and case study boxes bring important soils topics to life.

CONTENTS

1. The Soils Around Us
2. Formation of Soils from Parent Materials
3. Soil Classification
4. Soil Architecture and Physical Properties
5. Soil Water: Characteristics and Behavior
6. Soil and the Hydrologic Cycle
7. Soil Aeration and Temperature
8. The Colloidal Fraction: Seat of Soil Chemical and Physical Activity
9. Soil Acidity
10. Soils of Dry Regions: Alkalinity, Salinity, and Sodicity
11. Organisms and Ecology of the Soil
12. Soil Organic Matter
13. Nitrogen and Sulfur Economy of Soils
14. Soil Phosphorus and Potassium
15. Calcium, Magnesium, Silicon, and Trace Elements
16. Practical Nutrient Management
17. Soil Erosion and Its Control
18. Soils and Chemical Pollution
19. Geographic Soils Information
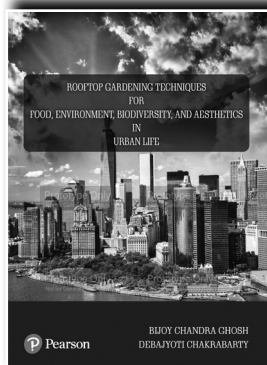20. Prospects for Soil Health in the Anthropocene

ABOUT THE AUTHOR

Raymond R. Weil, University of Maryland

Rooftop Gardening Techniques for Food, Environment, Biodiversity and Aesthetics in Urban Life

Bijoy Chandra Ghosh | Debajyoti Chakrabarty

176 | © 2022

ABOUT THE BOOK

Rooftop Gardening Techniques for Food, Environment, Biodiversity and Aesthetics in Urban – This book covers how to organically recycle waste, vermicomposting techniques, crop production, polytunnel and greenhouse construction and control irrigation technology. The detailed information on cultivation, nutrition, propagation, and multiplication of various types of plants are also covered. The advantages of rooftop gardening on education, the environment, biodiversity, and aesthetics are elaborated on. This book is intended to be a guide and can be of much use to city dwellers and home gardeners (especially those with ample free time), and hope it is of much assistance. Organic vegetation, usually rare in urban markets, can now be grown easily on a rooftop. The rooftops of both private and public buildings, hospitals, retail outlets and office buildings can be bought for the purpose of rooftop gardening. This book is dedicated to the subject, so that we can easily and cost-effectively create more green roofs in urban areas

CONTENTS

1. Introduction
2. Types of Green Roof and Structural Design
3. Principle of Crop Production in Rooftop Cultivation
4. Rooftop Gardening Techniques Involved in Crop Production
5. Components and Activities of Rooftop gardening
6. Organic Crop Production on Roof Top
7. Plants Suited to Rooftop Garden Environments
8. Case Studies

ABOUT THE AUTHOR

Mr. Bijoy Chandra Ghosh is a retired professor from Indian Institute of Technology, Kharagpur, with a long career of research in the academic field of agriculture. The rooftop gardening book reflects on his own contributions and experiences. Professor. Ghosh has tried to explore the conditions and factors affecting various types of crops being grown on rooftops, taking all problems into consideration, and attempting to find solutions. He has especially focused on the problem of growing organic crops using organic growing medium (vermicompost) for rooftop processes. The benefits of rooftop gardening on education, the environment, ecology, food production and wellbeing are well documented. In his credit, a large number of papers have been published in both national and international journals, and he has supervised 18 PhD students. He has also carried out a large number of research projects in the entirety of his academic career. His contributions in the areas of organic farming, vermicompost technologies, tea cultivation and commercialisation, rooftop technologies and crop diversification have had impacts in the world of agriculture. He has visited many countries, in order to both gain and share knowledge, and has significant experience and expertise in the field of agriculture.

Dr Debajyoti Chakrabarty, PhD, WBES, has throughout an excellent academic career. He was awarded the Indian National Scholarship, and Junior Research Fellowship from CSIR for his academic achievement, and obtained his PhD degree from the University of Kalyani, and his specialization is in Fisheries Science. After completion of Junior Research Fellowship he joined West Bengal Education Service as a lecturer in Zoology at PG Department of Zoology, Darjeeling Government College in 1990, then he has served PG Department of Zoology in Krishnanagar Government College, PG Department of Zoology, Barasat Government College and in later two institutions he was Head of the Department. Now he is serving in the Department of Zoology in GGDC, Singur as HOD. He is serving for more than 30years in West Bengal Education Service and has a research experience of more than 33 years. He successfully guided two students for PhD degrees and one student for MPhil degree. He has successfully completed two minor research projects funded by University Grants Commission as principal investigator. He has produced more than 31 research papers, a few books, chapters in National and International books and journals. He remained editor of two research journals. Beside his academic pursuits he has advisory in Fish Seed Supply, Fish Disease Prevention and Treatment, Fish medicine, Sustainable Development of Fisheries, Cage Culture, Bottom Clean, Biofloc, Conventional Culture, Fish Feed Making, Fish Feed Selling, Table size Fish Marketing and many other spheres of fisheries science
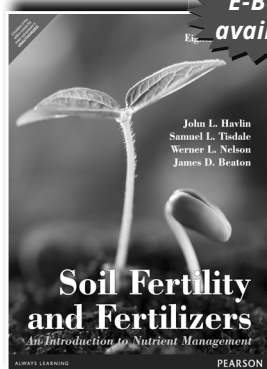
Soil Fertility and Fertilizers, 8/e

John L. Havlin | **Samuel L. Tisdale** | **Werner L. Nelson** | **James D. Beaton**

📄 **536** | © **2016**

Web Supplements

ISBN: 9789332570344

ABOUT THE BOOK

Soil Fertility and Fertilizers: An Introduction to Nutrient Management, Eighth Edition, provides a thorough understanding of the biological, chemical, and physical properties affecting soil fertility and plant nutrition. Covering all aspects of nutrient management for profitable crop production, the text pays particular attention to minimizing the environmental impact of soil and fertilizer management. The eighth edition of this proven text has been substantially revised to reflect rapidly advancing knowledge and technologies in both plant nutrition and nutrient management.

FEATURES

- Illustrates critical quantitative skills essential to professional success in nutrient management and related disciplines.
- Increased number of photographs, diagrams, and other visuals illustrating nutrient response in crops, soil management effects on crop growth, nutrient application equipment, and more.
- Covers a wide diversity of plants and cropping systems.
- Increased emphasis on alternative nutrient sources to the most common fertilizers.
- Substantially enhanced focus on environmental impacts of nutrient use.

CONTENTS

1. Introduction
2. Basic Soil-Plant Relationships
3. Soil Acidity and Alkalinity
4. Nitrogen
5. Phosphorus
6. Potassium
7. Sulfur, Calcium, and Magnesium
8. Micronutrients
9. Soil Fertility Evaluation
10. Basics of Nutrient Management
11. Nutrients Interactions and Economics
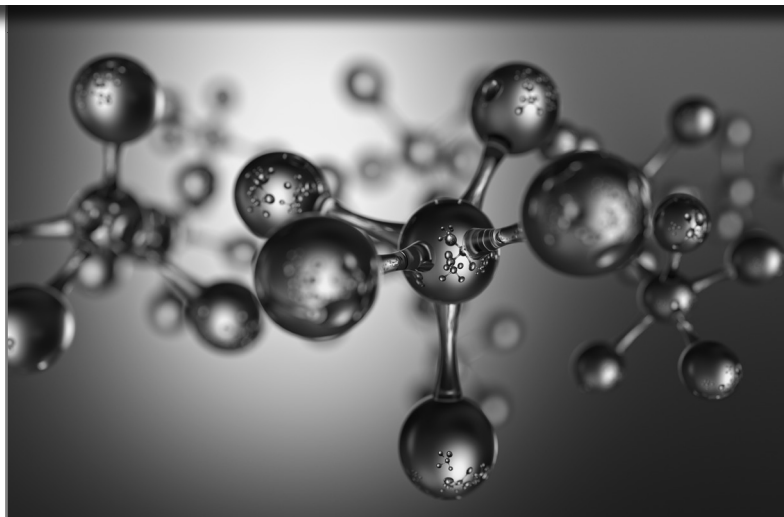12. Agricultural Productivity and Environmental Quality

ABOUT THE AUTHOR(S)

John L. Havlin, North Carolina State University

Samuel L. Tisdale

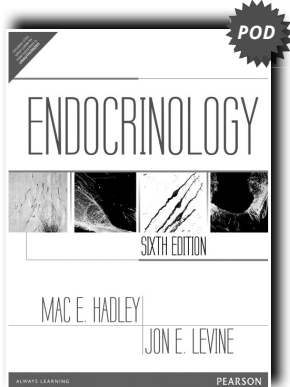**Werner L. Nelson,** North Carolina State University

James D. Beaton, Potash and Phosphate Institute of Canada

Biology

Endocrinology, 6/e

Mac E. Hadley | **Jonathan Levine**

608 | © 2009

ISBN: 9788131726105

*Web Supplements*

ABOUT THE BOOK

Appropriate for one-semester junior-graduate level courses in Endocrinology, Endocrine Physiology, as well as courses in medicine, dentistry, pharmacology, nutrition, nursing and other related medical or animal sciences where endocrinology is the focus. Hadley provides comprehensive coverage of endocrinology, centralizing on the critical roles of glands, hormones, receptors, and molecular signaling pathways in the control of physiological processes. This up-to-date Sixth Edition reviews the basic concepts, research methodologies, and the "state-of-the-art" scientific understanding of each of the major endocrine systems, in examples designed specifically for premedical and related professional courses.

FEATURES

- Emphasizes that all aspects of hormone function – synthesis, secretion, delivery, action and disposal – are of great physiological significance.
- Special reference to the roles of chemical messengers in the control of homeostatic systems—In the overall discussion of homeostasis.
- Coverage of the most recent molecular, genetic, and physiological—As well as the more classical methodologies.
- Traces the evolution of hormone structure—In relation to the comparative endocrinology of neurohypophysial hormones.

ANIMAL SCIENCE/ZOOLOGY

Human Reproductive Biology and Health

Meena Yadav | **Brototi Roy**
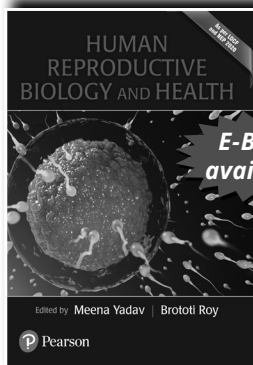
568 | © 2023

ISBN: 9789356066328

E-Book available

Web Supplements

ABOUT THE BOOK

This book covers various aspects of reproductive biology, such as reproductive endocrinology, anatomy and histology of male and female reproductive systems, physiology of male and female reproduction and associated events such as puberty and menopause, fertilization, and post-fertilization events. The disorders and diseases associated with the sexual differentiation and reproductive system have also been discussed. This textbook on Human reproductive biology and health is authored by subject matter experts who are teaching reproductive biology at the undergraduate and postgraduate levels at the University of Delhi as well as other premier universities in India. Lucid explanations combined with technical accuracy make this book an invaluable asset for students as well as those preparing for professional exams.

FEATURES

- Elucidates different processes in reproduction starting from germ cell formation to fertilization and consequent pregnancy, parturition, and lactation.
- Discusses the interplay of various hormones in the functioning and regulation of the male and female reproductive systems.
- Covers causes, diagnosis, and management of infertility, including latest methods, technologies, and infrastructure in assisted reproduction.
- Presents the modern methods in contraception and their use in family planning strategies.
- Includes chapters on population growth and reproductive health and family welfare in India

CONTENTS

1. Chromosomal Sex Determination and Sex Differentiation
2. Disorders of Sexual Differentiation and Development
3. Reproductive Hormones: Types, Mechanism of Action and Regulation
4. Neuroendocrine Control of Reproduction
5. Sex Steroids: Steroidogenesis and Metabolism
6. Hormonal Imbalance and Disorders of Reproductive System
7. Anatomy and Histology of the Male Reproductive System
8. Anatomy and Histology of Female Reproductive System
9. Physiology of Male Reproduction
10. Physiology of Female Reproduction
11. Puberty
12. Menopause
13. Fertilization
14. Implantation and Hormonal Regulation
15. Pregnancy
16. Mechanism of Parturition and Its Hormonal Regulation
17. Lactation
18. Contraception
19. Infertility: Causes, Diagnosis and Management
20. Assisted Reproductive Technology
21. Reproductive Tract Infections
22. Human Population Growth and Dynamics
23. Reproductive Health and Family Welfare in India
24. Cancers of the Human Reproductive System
25. Intersexuality: A Sociological Perspective

Acronyms

Glossary

ABOUT THE AUTHOR

Meena Yadav, Associate Professor,Department of Zoology, Maitreyi College, University of Delhi, Delhi.

Brototi Roy, Associate Professor, Department of Zoology,Maitreyi College, University of Delhi,Delhi

E-Book available

POD
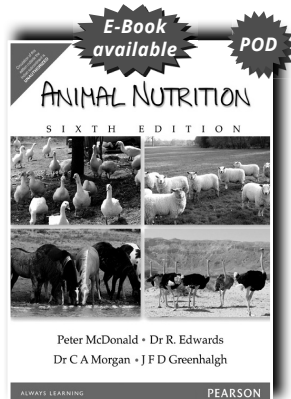
ISBN: 9788131717608

Animal Nutrition 6/e

✒ **Peter McDonald** | **R. Edwards** | **C A Morgan** | **J F D Greenhalgh**

📄 **708** | © **2002**

ABOUT THE BOOK

The latest edition of this classic text, now in a larger format with improved artwork, continues to provide a clear and comprehensive introduction to the science and practice of animal nutrition.

FEATURES

- New chapter on Animal Nutrition and the Consumers of Animal Products addressing contemporary concerns for safety in human diets.
- New chapter on Feed Additives.
- Major revisions of chapters on food analysis, lipids, metabolism, energy systems and protein evaluation.

Principles of Cancer Biology
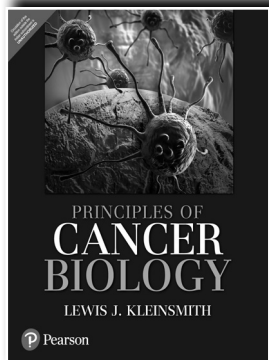
✒ **Lewis J. Kleinsmith**

📄 **320** | © **2016**

ISBN: 9789332577480

ABOUT THE BOOK

Principles of Cancer Biology, is an engaging book focused on providing students with a "big picture" view of cancer. Author Lewis Kleinsmith has written an instructional text focusing on key concepts for both students and a general audience. For those instructors who wish to delve into particular aspects of cancer biology in greater depth, each chapter contains a list of suggested readings that expand the detail as needed.

The text also emphasizes the scientific evidence that underlies cancer biology, and teaches students to think critically about this evidence- as there are constantly new "breakthroughs" and reports in this field. For students who need the review, there are brief reviews of several topics related to DNA replication and repair, cell division, cell signaling, and inheritance patterns in chapters where these subjects are relevant. By including these reviews, the text is both accessible and engaging to a broad audience of readers who are studying cancer biology for the first time, as well as an interested general audience.

FEATURES

- Focus on the key concepts to help build a foundation for further study.
- Scientifically based. The text teaches students how to read and critically evaluate the current research.
- Every chapter is subdivided into a series of conceptual sections, each introduced by a Sentence Heading that summarizes the Principle being described in that section.
- Art that Teaches. Each piece of art in the text has been carefully considered to ensure that readers can easily absorb the data.
- A bulleted Summary of Main Concepts is found at the end of each chapter helping students review the major principles covered in that chapter.
- Suggested Reading lists are included at the end of each chapter with an emphasis on review articles and carefully selected research publications that students are likely to find especially relevant and understandable.

CONTENTS

ABOUT THE AUTHOR

Lewis J. Kleinsmith, University of Michigan

4 Colour Edition

E-Book available

Cancer Biology

V Deepa Parvathi

256 | © 2023

ISBN: 9789356068056

ABOUT THE BOOK
This book on Cancer Biology is structured to build basic concepts in Neoplasia. Spread across seven chapters, the book provides a detailed description of the basics of cancer along with the molecular machinery, etiology and pathogenesis, cell signalling, hallmarks of cancer, cancer stem cells, animal models used for research, novel therapeutic approaches, case studies, clinical trials, and counselling. Additionally, review questions have been included to help the leaners reflect their understanding.

FEATURES
- Explains the core concepts using appropriate coloured illustrations and tables to concise voluminous data to help the reader comprehend the information.
- Includes case studies, clinical trials, and research on animal models to better understand the clinical aspects of cancer.
- Exclusive information on cancer stem cells provides students with an added advantage in regarding the differentiation potential, self-renewal, tumorigenic potential, and malignancy of cancer cells.

CONTENTS
1. Cancer: An Introduction
2. Generation of Cancer
3. General Etiology and Pathogenesis
4. Cell Cycle and Cell Signaling
5. Hallmarks of Cancer
6. Treatment and Other Novel Therapeutic Approaches
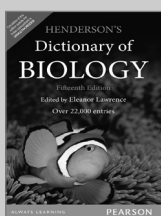7. Diagnosis, Prognosis and Counseling

ABOUT THE AUTHOR
V Deepa Parvathi is currently an Associate Professor at the Department of Biomedical Sciences, Sri Ramachandra Institute of Higher Education and Research (Deemed to be university), Chennai, India.

DICTIONARY OF BIOLOGY

➡ **ALSO AVAILABLE...**

DICTIONARY OF BIOLOGY: ALSO AVAILABLE
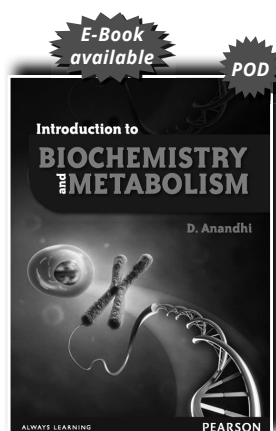
Henderson's Dictionary of Biology, 15/e

Lawrence

E-Book available

ISBN: 9789332517400

Pages: 776

Biotechnology

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E-Book available

POD

ISBN: 9788131774854

Introduction to Biochemistry and Metabolism

D Anandhi

416

ABOUT THE BOOK
Designed as per the UGC curriculum, Introduction to Biochemistry and Metabolism meets the syllabus requirements of all universities offering a course on biochemistry and metabolism. The subject, a core paper for the students of botany, zoology, biotechnology and bioinformatics, is dealt with in detail across 13 chapters with emphasis on the metabolism of amino acids, carbohydrates, lipids and high energy compounds. Replete with illustrations and schematic representations, the book reinforces theoretical concepts with its concise, easy-to-follow approach making it an ideal textbook on the subject.

FEATURES
- Comprehensive coverage of free radicals, antioxidation and proteins.
- Focus on enzymes, fatty acids and their metabolic activities.
- Elucidation of the detoxification mechanism.
- Disseminates information on diseases caused due to enzyme deficiencies.
- 150 illustrations and schematics to help readers understand how biochemical reactions and metabolic pathways work
- Includes laboratory techniques for qualitative and quantitative lipid analysis and estimation of proteins in food samples.

CONTENTS
1. Cell
2. Carbohydrates
3. Amino acids
4. Lipids
5. Nucleic acid
6. Enzymes
7. High energy compounds
8. Introduction to metabolism
9. Amino acid metabolism
10. Lipid metabolism
11. Nucleotide metabolism
12. Detoxication mechanism
13. AntibioticsLiterature Cited

ABOUT THE AUTHOR
D Anandhi is from the department of biochemistry, D G Vaishnav College, Chennai.

E-Book available
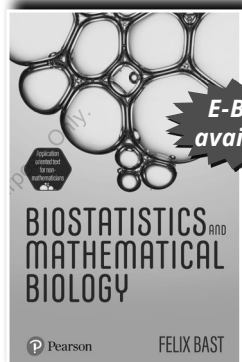
Biostatistics and Mathematical Biology

✒ **Felix Bast**

📄 **372** | © **2023**

ISBN: 9789356066267

ABOUT THE BOOK

A comprehensive textbook of biostatistics targeted at non-mathematicians at an advanced bachelor level and above.

The book sequentially covers basic mathematics topics essential for biologists, such as scientific methodology, levels of measurement, and explores more advanced concepts, including Bayes Theorem and Non-linear regression, thereby complying with the biostatistics syllabus of various universities as well as competitive examinations. This application oriented book focuses on the decision-making process during statistical tests and graphing, which test/graph to use, how much would be the minimum sample size, how to interpret the results, and so on. Authored by Prof. Felix Bast, whose course in UGC SWAYAM, "Biostatistics and Mathematical Biology" had been ranked the 7th best MOOC worldwide in 2020".

FEATURES

- Concise yet comprehensive textbook on the fundamental concepts of statistics.
- Focused on choosing the correct statistical test and interpreting the results.
- Non-mathematical approach; suitable for biologists and medical students.
- Clear-cut recommendations for various statistical tests and their variations.

CONTENTS

1. Introduction to Biostatistics and Mathematical Biology
2. Types of Studies
3. Levels of Measurements
4. Summarizing Data: Tabular Presentation
5. Summarizing Data: Graphical Presentation
6. Charting with Excel
7. Descriptive Statistics: Point Estimates
8. Descriptive Statistics: Interval Estimates
9. Error Bars
10. Moments, Normality Tests and Outliers
11. Concepts of Population, Sample and Confidence Intervals
12. Statistical Hypothesis Testing
13. Statistical Significance and P-Values
14. Relationship between Confidence Intervals and Statistical Significance
15. Statistical Power and Choosing the Right Sample Size
16. t-distribution and Tests of Significance Based on t-distribution
17. F-distribution and Tests of Significance Based on the F-distribution
18. Post-Hoc Tests
19. χ^2-distribution and Tests of Significance Based on χ^2-distribution
20. Comparing Proportions
21. Gaussian, Lognormal, Binomial and Poisson Distributions
22. Pearson's Correlation
23. Simple Linear Regression
24. Non-linear Regression, Multiple Regression, and Logistic Regression
25. Non-parametric Tests
26. Permutations and Combinations
27. Probability
28. Likelihood and Bayes' Theorem
29. Key Concepts of Statistics and Statistical Pitfalls to Avoid

ABOUT THE AUTHOR

Prof. Felix Bast is an award-winning Indian Science Communicator and a public educator working currently as a full Professor at Central University of Punjab, India. He is an expert panelist of Paris-based International Science Council, an elected fellow of Linnean Society of London, and a member of IUCN, Geneva. He holds Ph.D. in Marine Biology from MEXT, Japan (alumnus of Monbukagakusho:MEXT Japanese Govt. international doctoral fellowship), and served as expedition scientist in Indian Antarctic Mission.

Biostatistics for the Biological and Health Sciences, 2/e
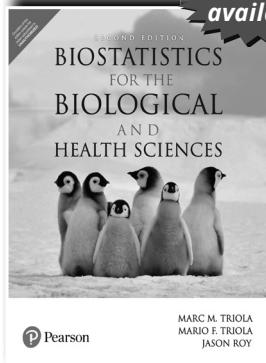
Marc M Triola | **Mario F Triola** | **Jason Roy**

728 | © 2020

Web Supplements

ISBN: 9789353436537

ABOUT THE BOOK

Biostatistics for the Biological and Health Sciences uses a variety of real-world applications to bring statistical theories and methods to life. Through these examples and a friendly writing style, the **2nd Edition** ensures that students understand concepts and develop skills in critical thinking, technology, and communication. The result of collaboration between two biological sciences experts and the author of the #1 statistics book in the US, this text provides an excellent introduction to statistics for students studying the biological, life, medical, and health sciences.

FEATURES

- **Latest and best methods** used by professional statisticians are incorporated.
- **New examples, exercises, and Chapter Problems** provide relevant and interesting real-world statistical applications, including biometric security, self-driving cars, smartphone data speeds, and the use of drones for delivery.
    - **More than 1,600 exercises** are included in the text, and nearly 85% are brand new!
    - **More than 200 examples** are scattered throughout the book, and almost 85% are new!
- **EXPANDED! Larger data sets** give students a more comprehensive look at concepts.
- **UPDATED! Real Data Sets:** 89% of the exercises in the text use real data, and 87% of the examples feature real statistics.
- **Easy-to-assign exercises** are graded by difficulty, and exercises that are particularly difficult or involve a new concept appear at the end of exercise sets and are marked by an asterisk, making it easy for instructors to assign homework.
- **Statistical Software:** SPSS, SAS, STATDISK, MINITAB, Excel, and TI-83/84 Plus output appear throughout the text.

CONTENTS

1. Introduction to Statistics
2. Exploring Data with Tables and Graphs
3. Describing, Exploring, and Comparing Data
4. Probability
5. Discrete Probability Distributions
6. Normal Probability Distributions
7. Estimating Parameters and Determining Sample Sizes
8. Hypothesis Testing
9. Inferences from Two Samples
10. Correlation and Regression
11. Goodness-of-Fit and Contingency Tables
12. Analysis of Variance
13. Nonparametric Tests
14. Survival Analysis

ABOUT THE AUTHOR

Marc Triola, MD, FACP is the Associate Dean for Educational Informatics at NYU School of Medicine, the founding director of the NYU Langone Medical Center Institute for Innovations in Medical Education (IIME), and an Associate Professor of Medicine.

Mario F. Triola is a Professor Emeritus of Mathematics at Dutchess Community College, where he has taught statistics for over 30 years. Marty designed the original Statdisk statistical software, and he has written several manuals and workbooks for technology supporting statistics education.

Jason Roy, PhD, is Associate Professor of Biostatistics in the Department of Biostatistics and Epidemiology, Perelman School of Medicine, University of Pennsylvania.

ISBN: 9789332536678

Biostatistical Analysis, 5/e

✒ **Jerrold H. Zar**

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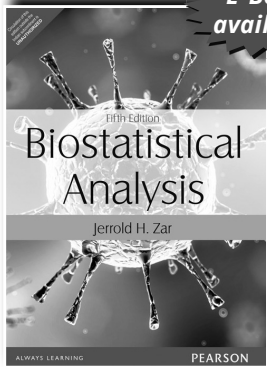
ABOUT THE BOOK

Zar's *Biostatistical Analysis, Fifth Edition*, is the ideal textbook for graduate and undergraduate students seeking practical coverage of statistical analysis methods used by researchers to collect, summarize, analyze and draw conclusions from biological research. The latest edition of this best-selling textbook is both comprehensive and easy to read. It is suitable as an introduction for beginning students and as a comprehensive reference book for biological researchers and for advanced students.

This book is appropriate for a one- or two-semester, junior or graduate-level course in biostatistics, biometry, quantitative biology, or statistics, and assumes a prerequisite of algebra.

FEATURES

- A broad collection of data-analysis procedures and techniques are presented, covering a wide variety of biological research, such as physiology, genetics, ecology, behavior, morphology.
- The most comprehensive treatment available includes coverage of the basics of statistical analysis, and also the following topics rarely or never found in statistics books for biologists:
  - Diversity
  - Polynomial regression
  - Multidimensional contingency tables
  - Stepwise regression
  - Nonparametric multiple comparisons
  - Higher order factorial analyses
  - of variance
  - Circular distributions
  - Power and sample size determinations.
- An orderly organization and presentation of topics, with cross-referencing as appropriate.
- The readable and accessible approach allows students with no previous statistical background or mathematical expertise beyond simple algebra to understand the material presented.
- The thoughtful presentation encourages students to think about the value of each statistical technique, as opposed to merely plugging numbers into formulae.
- The exposition considers complex procedures such as factorial analysis of variance and multiple regression in terms of the interpretation of typical computer output.
- A wealth of graphs and other figures are integrated to visually support concepts under discussion.
- A uniquely comprehensive set of statistical tables–more than 40 in all–facilitates statistical analyses without having to consult a separate book. This includes tables that are unique to this book.
- Worked examples for all major procedures guide readers step-by-step through the techniques, demonstrating each of the important concepts.
- An extensive bibliography directs readers to further relevant literature.

CONTENTS

ABOUT THE AUTHOR

Jerrold H. Zar received his undergraduate degree in Biological Sciences from Northern Illinois University in 1962. He later earned his M.S. and Ph.D. degrees in biology and zoology from the University of Illinois at Urbana-Champaign. Zar then returned to Northern Illinois University for 34 years to serve in a variety of capacities. He joined the faculty at NIU as an Assistant Professor in 1968 and quickly rose through the ranks of associate and full professor to become Chair of the Department of Biological Sciences in 1978. He served two terms as Chair of the Department and then, became the Vice Provost for Graduate Studies and Research and Dean of the Graduate School. He was a founder of the Illinois Minority Graduate Incentive Program and the Illinois Consortium for Educational Opportunities Program, where he helped create and protect fellowship opportunities for minority graduate students at universities across the state. Zar is a member of 17 professional scientific societies, including being an elected fellow of the American Association for the Advancement of Science. His many research publications cover a range of topics, from statistical analysis to physiological adaptations of animals to their environment.

INTRODUCTORY BIOTECHNOLOGY
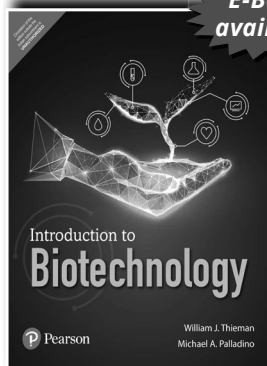
Introduction to Biotechnology, 4/e

William J. Thieman | **Michael A. Palladino**

448 | © 2021

Web Supplements

E-Book available

ISBN: 9789353945350

ABOUT THE BOOK

Introduction to Biotechnology brings the latest information and emphasizes the future of biotechnology and the biotechnology student's role with balanced coverage of basic cell and molecular biology, fundamental techniques, historical accounts, new advances, and hands-on applications. The 4th Edition features content updates in every chapter that reflect the most relevant, up-to-date changes in technology, applications, ethical issues, and regulations. Additionally, every chapter now includes an analytic Case Study that highlights current research and asks students to use what they've learned about key chapter concepts to answer questions.

FEATURES

- Coverage of recent research and developments includes discussions of gene editing approaches like CRISPR, precision medicine, immunotherapies, biosimilar drugs, transgenic crops, 3D bioprinting of tissues and organs, the Human Microbiome Project, and the Cancer Atlas Genome Project.
- Tools of the Trade Boxes provide details on modern techniques and methods related to each chapter's content and the biotech industry.
- Making a Difference inspires and engages students by discussing how real people, real companies, and real organizations are putting biotech to use to improve the quality of life.
- Forecasting the Future begins each chapter and highlights biotechnology-driven questions that have yet to be answered, are in the process of being researched, or are topics/research/policy that are under development and will have an impact on our future.
- 18 New - "You Decide" activities provide expanded coverage of ethics based on contemporary ethical issues. Thirty-seven "You Decide" boxes, integrated across all chapters, stimulate ethical discussion by giving students information relating to the social and ethical implications of biotechnology and regulations and asking students to grapple with open-ended questions.

CONTENTS

ABOUT THE AUTHOR(S)

William J. Thieman taught biology at Ventura College for 40 years and biotechnology for 11 years before retiring from full time teaching in 2005. He continues to serve as an advisor to the college biotechnology program. He received his B.A. in biology from California State University at Northridge in 1966 and his M.A. degree in Zoology in 1969 at UCLA. In 1995, he started the biotechnology program at Ventura College. In 1998, he added the laboratory skills course, and it was articulated as a state-approved vocational program. He identified technical skills needed for the program while serving three summer internships at Amgen, Biosource (now Invotrogen) and Biopool. The internships provided an opportunity to learn protocols, interact with lab directors, and query technicians, focusing on identifying the skills needed in these biotechnology companies. He routinely engaged his contacts at these biotechnology companies to lead lab protocols and describe their experiences to his classes.

Michael A. Palladino is Vice Provost for Graduate Studies, former Dean of the School of Science and Professor of Biology at Monmouth University in West Long Branch, New Jersey. He received his B.S. degree in Biology from Trenton State College (now known as The College of New Jersey) in 1987 and his Ph.D. in Anatomy and Cell Biology from the University of Virginia in 1994.
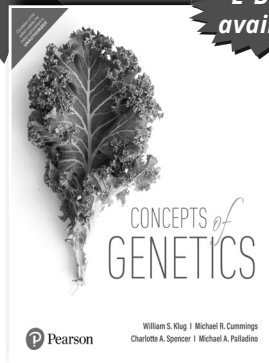
Concepts of Genetics, 11/e

William S. Klug | **Michael R. Cummings** | **Charlotte A. Spencer** | **Michael A. Palladino**

816 | © **2020**

ISBN: 9789353940409

ABOUT THE BOOK

Pearson presents the Eleventh Edition of *Concepts of Genetics*—a text now entering its fourth decade of providing support for students studying in this field, has occasioned still another fresh look. In addition to the normal updating that is inevitably required, this new edition focusses on the need to increase the opportunities for instructors and students to engage in **active and cooperative learning approaches** and the need to provide more **comprehensive, cutting-edge coverage of important and emerging topics** in genetics. This edition emphasizes the fundamental ideas of genetics and a strong problem-solving approach, while exploring modern techniques and applications of genetic analysis.

FEATURES

- **Modern Approaches to Understanding Gene Function** feature challenges students to understand how modern gene targeting approaches have dramatically advanced our understanding of gene function.
- **Evolving Concept of the Gene** is a short feature, integrated in appropriate chapters, that highlights how scientists' understanding of what a gene is has changed over time.
- **Three new Special Topics in Modern Genetics** mini-chapters explore cutting-edge topics, including updated content on Emerging Roles of RNA, Genetically Modified Foods, and Gene Therapy.
- **Neurogenetics** has been completely reworked and redefined to reflect the wealth of information regarding the impact of genetics on the field of neurobiology, linking genetic analysis to brain function and brain disorders.

CONTENTS

Part One: Genes, Chromosomes, and Heredity
1. Introduction to Genetics
2. Mitosis and Meiosis
3. Mendelian Genetics
4. Extensions of Mendelian Genetics
5. Chromosome Mapping in Eukaryotes
6. Genetic Analysis and Mapping in Bacteria and Bacteriophages
7. Sex Determination and Sex Chromosomes
8. Chromosome Mutations: Variation in Number and Arrangement
9. Extranuclear Inheritance

Part Two: DNA: Structure, Replication, and Variation
10. DNA Structure and Analysis
11. DNA Replication and Recombination
12. DNA Organization in Chromosomes

Part Three: Gene Expression, Regulation, and Development
13. The Genetic Code and Transcription
14. Translation and Proteins
15. Gene Mutation, DNA Repair, and Transposition
16. Regulation of Gene Expression in Prokaryotes
17. Regulation of Gene Expression in Eukaryotes
18. Developmental Genetics
19. Cancer and Regulation of the Cell Cycle

Part Four: Genomics
20. Recombinant DNA Technology
21. Genomics, Bioinformatics, and Proteomics
22. Applications and Ethics of Genetic Engineering and Biotechnology

Part Five: Genetics of Organisms and Populations
23. Quantitative Genetics and Multifactorial Traits
24. Neurogenetics
25. Population and Evolutionary Genetics

ABOUT THE AUTHOR(S)

William S. Klug is an Emeritus Professor of Biology at The College of New Jersey (formerly Trenton State College) in Ewing, New Jersey, where he served as Chair of the Biology Department for 17 years.

Michael R. Cummings is Research Professor in the Department of Biological, Chemical, and Physical Sciences at Illinois Institute of Technology, Chicago, Illinois.

Charlotte A. Spenceris a retired Associate Professor from the Department of Oncology at the University of Alberta in Edmonton, Alberta, Canada.

Michael A. Palladino is Dean of the School of Science and Professor of Biology at Monmouth University in West Long Branch, New Jersey.

iGenetics: A Molecular Approach, 3/e
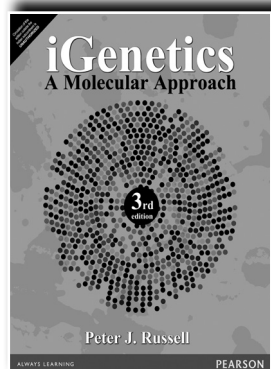
✒ **Peter J. Russell**

📄 **864** | © **2016**

ABOUT THE BOOK

With its modern chapter organization and new "Focus on Genomics" boxes, *iGenetics: A Molecular Approach* reflects the increasing molecular emphasis in today's experimental study of genes while helping students develop problem-solving skills and an appreciation for classic experiments. Although molecular topics are presented first, instructors can assign the chapters in any sequence.

Pedagogical features such as chapter-opening "Key Questions" and strategically placed "Keynotes" help students to efficiently master genetic concepts. The Genetics Place Companion Website contains interactive iActivities and narrated animations that help students visualize and understand processes and concepts that are illustrated in the text.

FEATURES

■ Modern chapter organization covers all major areas of genetics, balancing molecular and classical aspects to give students an integrated view of genetic principles.
■ The text's inquiry-based approach engages students in the process of science.
■ Step-by-step examples of problem solving throughout the book represent a wide range of topics and difficulty levels.
■ Key Questions, appear at the beginning of each chapter, focus student attention in advance on the major concepts within their reading.
■ Keynotes, strategically placed throughout the chapter, summarize important ideas and allow students to check their progress.

CONTENTS

1. Genetics: An Introduction
2. DNA: The Genetic Material
3. DNA Replication
4. Gene Control of Proteins
5. Gene Expression: Transcription
6. Gene Expression: Translation
7. DNA Mutation, DNA Repair, and Transposable Elements
8. Genomics
9. Functional and Comparative Genomics
10. Recombinant DNA Technology
11. Mendelian Genetics
12. Chromosomal Basis of Inheritance
13. Extensions of and Deviations from Mendelian Genetic Principles
14. Genetic Mapping in Eukaryotes
15. Genetics of Bacteria and Bacteriophages
16. Variations in Chromosome Structure and Number
17. Regulation of Gene Expression in Bacteria and Bacteriophages
18. Regulation of Gene Expression in Eukaryotes
19. Genetic Analysis of Development
20. Genetics of Cancer
21. Quantitative Genetics
22. Population Genetics
23. Molecular Evolution

ABOUT THE AUTHOR

Peter J. Russell received his B.Sc. in Biology from the University of Sussex, U.K., in 1968 and his Ph.D. in Genetics from Cornell University in 1972. He then joined the Biology faculty of Reed College in 1972 where he is currently Professor of Biology. Russell teaches an upper-division genetics and molecular biology lecture/laboratory course, the genetics section of the introductory biology course, an advanced seminar course in molecular virology, and advises senior thesis research students. He is also the author of a number of successful biology and genetics textbooks.

Genetics, 3/e

✒ **Monroe W. Strickberger**
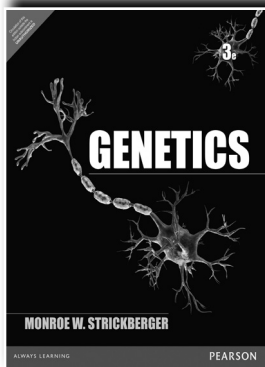
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ABOUT THE BOOK

Genetics occupies a unique central position among the various biological sciences because of its diverse specializations. This acclaimed book provides the basic theoretical information on genetics, the study of heredity and details some of the experiments and reasoning which yield this information. The book is organized into six parts and deals with the identification, transmission and distribution, arrangement, structure, and function of genetic material. The last part of the book deliberates on the course of genetic material in populations. The comprehensive material is supported by a multitude of illustrations and references and problems in every chapter.

CONTENTS

Part I Identification Of Genetic Material:
1. History of the Problem
2. Cellular Division and Chromosomes
3. Reproductive Cycles
4. Nucleic Acids
5. Replication and Synthesis of Nucleic Acids

Part II Transmission And Distribution Of Genetic Material:
6. Mendelian Principles: I. Segregation
7. Mendelian Principles: II. Independent Assortment
8. Probability and Statistical Testing
9. Dominance Relations and Multiple Alleles in Diploid Organisms
10. Environmental Effects and Gene Expression
11. Gene Interaction and Lethality
12. Sex Determination and Sex Linkage in Diploids
13. Maternal Effects and Cytoplasmic Heredity
14. Quantitative Inheritance
15. Analysis of Quantitative Characters

Part III Arrangement Of Genetic Material:
16. Linkage and Recombination
17. Gene Mapping in Diploids
18. Recombination in Fungi
19. Recombination in Bacteria
20. Recombination in Viruses

Part IV Change And Structure Of Genetic Material:
21. Chromosome Variation in Number

➡ **ALSO AVAILABLE...**

POD **Introduction to Quantitative Genetics, 4/e**
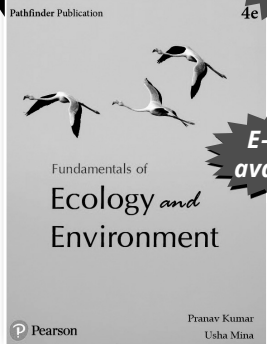
✒ **Falconer**

ISBN: 9788131727409

Pages: 480

POD **Nanotechnology: A Gentle Introduction to the Next Big Idea**

✒ **Ratner**

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Fundamentals of
Ecology and
Environment

Pranav Kumar
Usha Mina

P Pearson

E-Book available

ISBN: 9788119896042

Fundamentals of Ecology and Environment

✒ **Pranav Kumar** | **Usha Mina**

📄 **288** | © **2024**

ABOUT THE BOOK
This book has been conceptualized to promote understanding of ecology's basic principles and concepts rather than memorization of details. Sincere efforts have been made to support textual explanations with the help of flow charts, figures, tables to make learning easy and convincing. We have also focused on improving and updating the artwork in the text. This book has been written primarily for readers beginning their study of ecological sciences at the college level, but the book will also serve as a source of information for those who study is more advanced and for those engaged in the practice of ecological science as a profession.

FEATURES
- Emphasis on fundamentals and principles with expanded coverage of critical topics.
- Facilitation of quick and easy comprehension of the subject matter.
- Clear and simple illustrations that make the content accessible to readers without a strong background in biology or other sciences.
- A structured approach to learning that guides readers through the material in a systematic manner.

CONTENTS
1. The Environment
2. Ecosystem Ecology
3. Population Ecology
4. Community Ecology
5. Biodiversity
6. Pollution
7. Climate Change

ABOUT THE AUTHOR(S)
Pranav Kumar, Former faculty, Department of Biotechnology, Jamia Millia Islamia, New Delhi, India
Usha Mina, Professor, School of Environmental Sciences, Jawaharlal Nehru University (JNU), New Delhi, India.

E-Book available

Eighth Edition
**ELEMENTS OF
ECOLOGY**

Thomas M. Smith
Robert Leo Smith

PEARSON
ALWAYS LEARNING

ISBN: 9789332536692

Elements of Ecology, 8/e

✒ **Thomas M. Smith** | **Robert Leo Smith**

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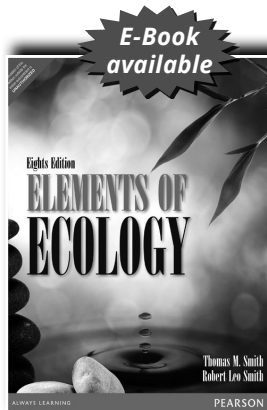
ABOUT THE BOOK
Known for its evolution theme and strong coverage of the relevance of ecology to everyday life and the human impact on ecosystems, the thoroughly revised Eighth Edition features refined quantitative exercises, a restructured chapter on life history, a thoroughly revised species interactions unit including a chapter introducing the subject, and a new chapter on species interactions.

To emphasize the dynamic and experimental nature of ecology, each chapter draws upon current research in the various fields of ecology while providing

accessible examples that help students understand species natural history, specific ecosystems, the process of science, and ecological patterns at both an evolutionary and demographic scale.

To engage students in using and interpreting data, a wide variety of Quantifying Ecology boxes walk through step-by-step examples of equations and statistical techniques. The enhanced companion website (www.ecologyplace.com) features new MapMaster™ interactive map activities for exploring ecosystems, physical environments, and populations at regional and global scales, along with popular GRAPHit!, and QUANTIFYit! exercises that help students further master and apply math skills, and a new Pearson eText.

FEATURES
- Interpreting Ecological Data exercises help students test their understanding of graphs and data and to consider different outcomes.
- The Ecology Place companion website is referenced in the text and features new MapMaster interactive map activities for exploring ecosystems, physical environments, and populations at regional and global scales, along with popular GRAPHit!, and QUANTIFYit! exercises that help students further master and apply math skills, and a new Pearson eText. A subscription to the Ecology Place is included with each new copy of the text for no additional charge (www.ecologyplace.com).
- Quantifying Ecology boxes help students develop the quantitative skills they need to interpret ecological data, research, and models. Skills are reinforced by a set of follow-up questions and links to GRAPHit! and QUANTIFYit! on the companion website (www.ecologyplace.com).
- Field Studies discuss ecological research performed by young up-and-coming scientists, and challenge students to interpret the results of the featured research.
- Ecological Issues essays describe how humans influence the study of ecology. For example, the short essay "The Ecology of Antibiotic Resistance" discusses how antibiotic resistance is a result of natural selection. Each essay is followed by a set of critical thinking questions.
- Engaging introductions give students a "big picture" overview of the coming chapters in each of the eight parts of the book, so they can understand how various topics interrelate.
- Landscape Ecology chapter explores the role of disturbance in ecosystems.
- Further Readings at the end of each chapter emphasize how the text is based on real scientific studies. These Further Readings are annotated to explain their relevance to the student/instructor.

CONTENTS

I. The Physical Environment
2. Climate
3. The Aquatic Environment
4. The Terrestrial Environment

II. The Organism and its Environment
5. Ecological Genetics: Adaptation and Natural Selection
6. Plant Adaptations to the Environment
7. Animal Adaptations to the Environment

III. Populations
8. Properties of Populations
9. Population Growth
10. Life History
11. Intraspecific Population Regulation
12. Metapopulations

IV. Species Interactions
13. Species Interactions, Population Dynamics and Natural Selection
14. Interspecific Competition
15. Predation

16. Parasitism and Mutalism

V. Community Ecology
17. Community Structure
18. Factors Influencing the Structure of Communities
19. Community Dynamics
20. Landscape Ecology

VI. Ecosystem Ecology
21. Ecosystem Energetics
22. Decomposition and Nutrient Cycling
23. Biogeochemical Cycles

VII. Biogeographical Ecology
24. Terrestrial Ecosystems
25. Coastal and Wetland Ecosystems
26. Land-Water Margins
27. Large-scale Patterns of Biological Diversity

VIII. Human Ecology
28. Population Growth, Resource Use, and Sustainability
29. Global Climate Change

ABOUT THE AUTHOR(S)
Thomas M. Smith, Associate Professor in Environmental Sciences at the University of Virginia, received his Ph.D. in ecology from the University of Tennessee in 1982. The main focus of his research over the past two decades has been to develop an individual based theory of community and ecosystems dynamics. As part of this work he has served on numerous national and international panels that have addressed the potential influence of human activities on the

global environment. He has authored over 70 publications based on his research, and he has been recognized as one of the most cited scientists in the field of global change research.

Robert L. Smith holds a Ph.D. in Wildlife Biology from Cornell University. He is Professor Emeritus of Ecology at West Virginia University. He has spent over 30 years teaching Ecology and conducting field research throughout the world. His teaching responsibilities have involved mostly undergraduate courses in general ecology and graduate courses in population ecology and wildlife management. His research has included forest-fire related problems in southern West Virginia, vegetational development and succession on abandoned and reclaimed surface mines, the relation between forest vegetational structure and the forest bird community, and forest habitat assessment and habitat evaluation procedures based on vegetational structure.

IMMUNOLOGY
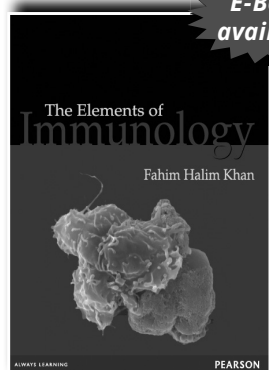
The Elements of Immunology

Fahim Halim Khan

📄 **508** | © **2009**

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E-Book available

The Elements of
Immunology

Fahim Halim Khan

ALWAYS LEARNING   PEARSON

ISBN: 9788131711583

ABOUT THE BOOK
The Elements of Immunology is designed to introduce readers to the exciting world of immunology, the people who populate it and foster a curiosity to question and know more. The book is supported by a consistent, colourful art programme. The detailed explanation of concepts and terms, and the deconstruction of complex molecular mechanisms into simple, easy-to-remember steps help students focus on the fundamentals without any distractions. Packed with extensive Web-based supplements, the book enables students to visualize concepts, thereby enriching the learning process. The book, comprising twenty chapters, has numerous pedagogical elements built into it. Margin snippets present interesting and relevant information without breaking the flow of the text. Margin definitions highlight the key terms for easy identification and recollection. Each chapter talks about a relevant molecular biology technique, thus providing an insight into the practical aspect of immunology as well. A glossary at the end of the book lists out the important terms used.

FEATURES
- Simple and lucid language explaining core concepts
- Rich pedagogy that facilitates learning
- Colourful and consistent art programme comprising over 300 four-colour illustrations that helps to visualize and comprehend concepts better
- 400 end-of-chapter questions help revise the key concepts
- Discussion of the latest developments in the area of immunology such as MHC haplotype matching for cell transplantation, latest antiretroviral drugs developed against HIV, etc.
- Description of key contributors, researchers and their landmark experiments
- Packed with supplements and media resources
  - Over 30 animations that depict key concepts in three dimensions
  - A question bank containing over 400 questions and clinical case studies along with lecture slides including artwork from the book, as supplements to the text, specifically for the instructors

CONTENTS
1. Introduction to the Immune System
2. Cells and Organs of the Immune System
3. Antigens
4. Antibodies
5. Generation of Antibody Diversity
6. Major Histocompatibility Complex
7. T-cell Receptor
8. T-cell Development and Activation

9. B-cell Development and Activation
10. Complement System
11. Antigen Processing and Presentation
12. Cell-mediated Immunity
13. Hypersensitivity
14. Cell Migration and Inflammatory Response
15. Immune Response to Infectious Agents
16. Vaccines
17. Transplantation Immunology
18. Cancer and the Immune System
19. Primary and Secondary Immunodeficiencies
20. Autoimmunity and Autoimmune Diseases

ABOUT THE AUTHOR
Fahim Halim Khan Department of biochemistry at the Aligarh Muslim University.

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IPR, Biosafety and Bioethics

Deepa Goel | **Shomini Parashar**

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Web Supplements

E-Book available

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IPR, Biosafety and Bioethics
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Shomini Parashar
ALWAYS LEARNING
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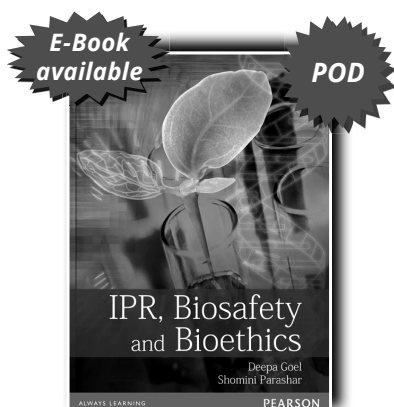
ISBN: 9788131774700

ABOUT THE BOOK
This book provides a broad coverage of three areas of patenting intellectual property rights (IPR), biosafety and bioethics. It creates awareness about the value of IPR in our lives. The book also fosters a better understanding of the rights associated with IPR such as copyright, patent, trademarks, industrial designs, geographical indications and so on. Biosafety and bioethical issues prevalent in modern society are discussed. The text covers the complete syllabi of all major Indian universities and caters to the needs of Indian students.

FEATURES
- Discusses all aspects of the subject in a simple and lucid manner
- Contains review question and multiple-choice questions for practice
- Provides unmatched pedagogy:
    - 100 review questions
   - 120 multiple-choice questions

CONTENTS
1. Meaning and Justification of Patenting an Invention
2. History and Evolution of Patent Law
3. Classification of Patents
4. Grant of Patent and Patenting Authorities
5. Patent Owner: Rights and Duties
6. Protection of Plant varieties and Farmers' Right Act, 2001
7. Patent law- Present Scenario
8. Introduction to Biosafety
9. GMOs: Concerns and Challenges
10. National and International Regulatory Mechanism for GMO
11. Biosafety of Genetically Engineered Products
12. Allergenecity: Assessment of Genetically Modified food
13. Introduction to Bioethics
14. NGOs for Biosafety and Bioethics
15. Web-based Information of Biosafety on GMO
16. Good Laboratory Biosafety Practices
17. Case Studies in IPR and Biosafety

ABOUT THE AUTHOR(S)
Deepa Goel is Assistant Professor at the Department of Biotechnology, IMS Engineering College, Ghaziabad. Her core area of interest is the development of transgenic plants with elite traits.
Shomini Parashar is Assistant Professor at the Department of Biotechnology. IMS Engineering College, Ghaziabad. Her core area of interest is screening of microbes with novel traits that are useful to mankind.
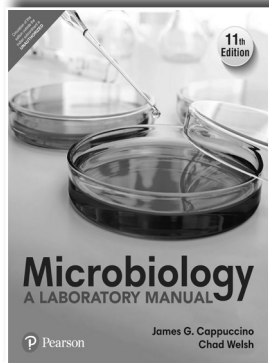
Microbiology: A Laboratory Manual, Global Edition, 11/e

James G. Cappuccino | **Chad T. Welsh**

568 | © **2023**

ABOUT THE BOOK

Easy to adapt for almost any microbiology lab course, this versatile, comprehensive, and clearly written manual can be paired with any undergraduate microbiology text. Known for its thorough coverage, straightforward procedures, and minimal equipment requirements, the Eleventh Edition incorporates current safety protocols from governing bodies such as the EPA, ASM, and AOAC. The new edition also includes alternate organisms for experiments for easy customization in Biosafety Level 1 and 2 labs. New lab exercises have been added on Food Safety and revised experiments, and include options for alternate media, making the experiments affordable and accessible to all lab programs. Ample introductory material, engaging clinical applications, and laboratory safety instructions are provided for each experiment along with easy-to-follow procedures and flexible lab reports with review and critical thinking questions.

FEATURES

- A new experiment on the Propagation of Isolated Bacteriophage Cultures has been added that guides students to isolate bacteriophages for genetic manipulation.
- Biosafety Levels (BSLs) have been added to the Eleventh Edition to alert students to appropriate safety techniques.
- Tips for Success appear in select experiments and draw attention to common mistakes and stumbling blocks in the lab.
- Revised experiments include options for alternate media, making the experiments affordable and accessible to all sizes of lab programs. Experiment 60 has been revised to focus on the normal microbiota of human skin and the importance of hand washing.
- Easy-to-adapt Lab Reports include blank spaces or options for "alternate organisms" for easy customization with organisms that are readily available.
- Numerous photographs in full color and illustrations help students visualize techniques and expected results.

CONTENTS

Part I Basic Laboratory Techniques for Isolation, Cultivation, and Cultural Characterization of Microorganisms

1. Culture Transfer Techniques
2. Techniques for Isolation of Pure Cultures
3. Cultural Characteristics of Microorganisms
4. Microscopic Examination of Stained Cell Preparations
5. Microscopic Examination of Living Microorganisms Using a Hanging-Drop Preparation or a Wet Mount

Part II Bacterial Staining

6. Preparation of Bacterial Smears
7. Simple Staining
8. Negative Staining
9. Gram Stain
10. Acid-Fast Stain
11. Differential Staining for Visualization of Bacterial Cell Structures

Part III Cultivation of Microorganisms: Nutritional and Physical Requirements, and Enumeration of Microbial Populations

12. Nutritional Requirements: Media for the Routine Cultivation of Bacteria
13. Use of Differential, Selective, and Enriched Media
14. Physical Factors: Temperature
15. Physical Factors: pH of the Extracellular Environment
16. Physical Factors: Atmospheric Oxygen Requirements
17. Techniques for the Cultivation of Anaerobic Microorganisms
18. Serial Dilution—Agar Plate Procedure to Quantitate Viable Cells
19. The Bacterial Growth Curve

ABOUT THE AUTHOR

James G. Cappuccino SUNY, Rockland Community College

Chad T. Welsh Lindenwood University

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4 Colour Edition

POD

E-Book available

Fourth Edition

Robert W. Bauman

Microbiology
with Diseases by Body System

P Pearson
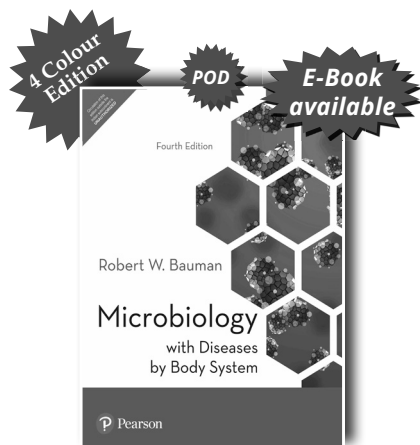
ISBN: 9789332587441

Microbiology with Diseases by Body System, 4/e

Robert W. Bauman

📄 **944** | © **2017**

ABOUT THE BOOK

Designed for pre-nursing and allied health students (and also mixed-majors courses), *Microbiology with Diseases by Body System, Fourth Edition* retains the hallmark art program and clear writing style that have made Robert Bauman's book a success. This Third Edition features compelling clinical content related to students' future healthcare careers and abundant opportunities for applied student practice. Chapter-opening Clinical Cases, Emerging Diseases boxes, and Clinical Applications boxes introduce students to real-world clinical situations. Student comprehension is ensured with end-of-chapter practice that encompasses applied, visual, and conceptual understanding.

CONTENTS

1. A Brief History of Microbiology
2. Cell Structure and Function
3. Microscopy, Staining, and Classification
4. Microbial Metabolism
5. Microbial Nutrition and Growth
6. Microbial Genetics

7. Recombinant DNA Technology
8. Controlling Microbial Growth in the Environment
9. Controlling Microbial Growth in the Body: Antimicrobial Drugs
10. Characterizing and Classifying Prokaryotes
11. Characterizing and Classifying Eukaryotes
12. Characterizing and Classifying Viruses, Viroids, and Prions
13. Infection, Infectious Diseases, and Epidemiology
14. Innate Immunity
15. Adaptive Immunity
16. Immunization and Immune Testing
17. AIDS and Other Immune Disorders
18. Microbial Diseases of the Skin and Wounds
19. Microbial Diseases of the Nervous System and Eyes
20. Microbial Cardiovascular and Systemic Diseases
21. Microbial Diseases of the Respiratory System
22. Microbial Diseases of the Digestive System
23. Microbial Diseases of the Urinary and Reproductive Systems
24. Applied and Environmental Microbiology

ABOUT THE AUTHOR

Robert W. Bauman, Amarillo College

MOLECULAR & CELL BIOLOGY

NEW

4 Colour Edition
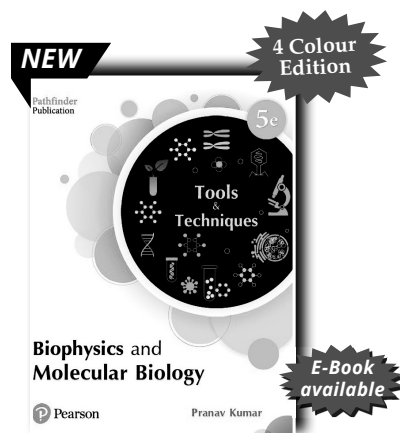
Biophysics and Molecular Biology: Tools and Techniques

Pranav Kumar

📄 **280** | © **2024**

Web Supplements

ISBN: 9788119896622

E-Book available

ABOUT THE BOOK

This textbook covers the essential fundamentals and applications of current techniques and methodologies. It is presented in a sharply focused manner, without overwhelming or excessive detail. Each chapter contains information in a systematic and logically organized manner. It is a perfect introductory textbook for any reader needing to learn the basics of the subject, assuming they have little prior knowledge of it. In this revised and updated edition, the focus is on building upon the strengths of the previous editions to present biophysics in an even more precise and streamlined manner. Additionally exciting new advances from the field has been incorporated. Throughout the book, explanations of basic concepts have been updated and strengthened with examples from new research.

CONTENTS

1. Chromatography
2. Electrophoresis
3. Spectroscopy
4. Mass spectrometry
5. Centrifugation
6. Microscopy
7. Flow cytometry
8. X-ray crystallography
9. Patch clamp techniques
10. Immunotechniques
11. FRET and FRAP Molecular Biology
12. Molecular Biology Techniques
13. Basic laboratory calculations
    Self Test
    Index

ABOUT THE AUTHOR(S)

Pranav Kumar, Former faculty, Department of Biotechnology, Jamia Millia Islamia, New Delhi, India.

The Cell: Organization, Functions and Regulatory Mechanisms

Shakir Ali

🗋 **376** | © **2014**

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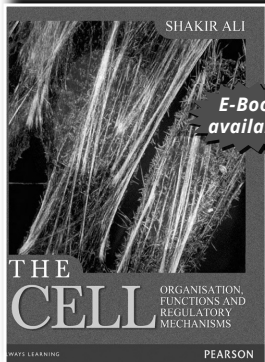
ISBN: 9788131773284

ABOUT THE BOOK

The Cell: Organisation, Functions and Regulatory Mechanisms provides a precise blend of basic and applied knowledge of cell science that reinforces the conceptual understanding of the subject with leading edge examples and experiments. Catering to the prescribed curricula for a wide range of programmes in different universities and colleges, this book is ideal for undergraduate and postgraduate students who pursue a detailed study of the subject. The book will also serve as a standard resource material for teachers and scholars who may like to enrich their knowledge about the cell in areas pertaining to their specific fields of interest.
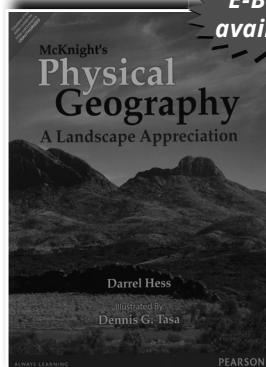
Geology & Earth Science

McKnight's Physical Geography: A Landscape Appreciation, 10/e

Darrel Hess | **Dennis G. Tasa**

📄 **624** | © **2016**

ISBN: 9789332551909

ABOUT THE BOOK

Carrying forth Tom L. McKnight's well-known thematic focus on landscape appreciation, this best-seller fosters a solid understanding of Earth and its physical geography. Its clear writing style, superior art program, and abundant pedagogy appeal to a wide variety of students. This edition includes thoroughly updated content and introduces renowned illustrator Dennis Tasa—yet it maintains the proven approach first presented by McKnight more than two decades ago.

FEATURES

- Unique landscape appreciation approach and clear presentation of concepts make this hallmark classic text engaging and easily accessible to students of all backgrounds.
- An excellent new cartographic and illustration program by renowned geoscience Illustrator Dennis Tasa provides:
- Hundreds of maps with shaded relief where appropriate
- Line art with numerous multi-part illustrations that capture sequence and evolution to help students understand various processes
- Major photos paired with locator maps to enhance geographic literacy.
- Global environmental change is integrated and discussed extensively throughout the book.

CONTENTS

1. Introduction to Earth
2. Portraying Earth
3. Introduction to the Atmosphere
4. Insolation and Temperature
5. Atmospheric Pressure and Wind
6. Atmospheric Moisture
7. Atmospheric Disturbances
8. Climate and Climate Change
9. The Hydrosphere
10. Cycles and Patterns in the Biosphere
11. Terrestrial Flora and Fauna
12. Soils
13. Introduction to Landform Study
14. The Internal Processes
15. Preliminaries to Erosion: Weathering and Mass Wasting
16. Fluvial Processes
17. Solution Processes and Karst Topography
18. The Topography of Arid Lands
19. Glacial Modification of Terrain
20. Coastal Processes and Terrain

ABOUT THE AUTHOR(S)

Darrel Hess is professor of geography at City College of San Francisco, where he served as chair of the Earth Sciences department from 1995-2009. He regularly teaches physical geography, economic geography, and human geography. Hess received his B.A. in geography from UC Berkeley and his M.A. in geography from UCLA.

Dennis Tasa has been a renowned illustrator of many bestselling geoscience textbooks since 1978, including Physical Geography by Darrel Hess, Laboratory Manual in Physical Geology by the American Geosciences Institute and the National Association of Geoscience Teachers, as well as the physical geology, Earth science, and meteorology franchises by Tarbuck and Lutgens.

Tom L. McKnight taught geography at UCLA from 1956 to 1993. He received his bachelor's degree in geology from Southern Methodist University in 1949, his master's degree in geography from the University of Colorado in 1951, and his Ph.D. in geography and meteorology from the University of Wisconsin in 1955. During his long academic career, Tom served as chair of the UCLA Department of Geography from 1978 to 1983, and was director of the University of California Education Abroad Program in Australia from 1984 to 1985.
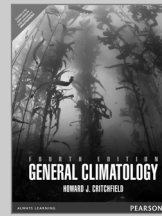
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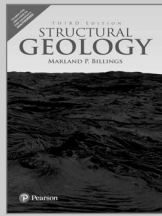
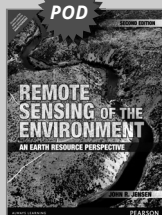**Structural Geology, 3/e**

Billings

ISBN: 9789332577565

Pages: 624

General Climatology, 4/e

Critchfield

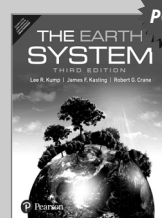ISBN: 9789332555242

Pages: 464

POD

Remote Sensing of the Environment: An Earth Resource Perspective, 2/e

Jensen

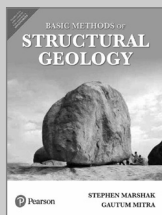ISBN: 9789332518940

Pages: 618

E-Book available

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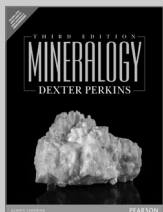
Kump

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Pages: 472

E-Book available

Basic Methods of Structural Geology
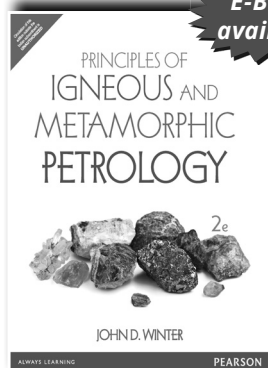
Marshak

ISBN: 9789352864348

Pages: 464

Mineralogy, 3/e

Perkins

E-Book available

ISBN: 9789332550421

Pages: 453

E-Book available

Principles of Igneous and Metamorphic Petrology, 2/e

John D. Winter

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ABOUT THE BOOK
Typical texts on igneous and metamorphic petrology are geared to either advanced or novice petrology students. This unique text offers comprehensive, up-to-date coverage of both igneous and metamorphic petrology in a single volume—and provides the quantitative and technical background required to critically evaluate igneous and metamorphic phenomena in a way that students at all levels can understand. The goal throughout is for students to be able to apply the techniques—and enjoy the insights of the results—rather than tinker with theory and develop everything from first principles.

ISBN: 9789332550407

FEATURES
- A balanced presentation limits the theory to the extent that students can practice it on real occurrences—without such excessive detail that the course becomes more like chemistry than geology.
- A survey of actual occurrences of igneous and metamorphic rocks, and processes that produce them, is provided. This section is often greatly condensed in most other texts, but it is the most interesting and dynamic aspect of petrology.
- A techniques/occurrences approach for both igneous and metamorphic rocks that first presents the techniques, then applies them to assess a field area, and then expands the techniques as necessary if the field examples call for it.
- A comprehensive section on petrogenesis, particularly igneous petrogenesis, covers important igneous petrogenetic associations
- An accessible approach to mathematics, chemistry, and physics requires only a working knowledge of algebra; calculus is occasionally discussed, but is not required. Chemical and physical principles are presented early on, and at a level that is comprehensible and accessible.
- Worked examples, problems, and computer-related problems, found at the end of many chapters, carefully integrate a number of problems and computer programs
- Spreadsheets are used extensively in worked examples and problems. Spreadsheets, data files, and other programs
- Approximately 350 figures and tables are provided.

CONTENTS

ABOUT THE AUTHOR

John D. Winter did his undergraduate work in geology at the University of Illinois at Urbana, and earned his M.S. and Ph.D. at the University of Washington in Seattle. Now Professor of Geology at Whitman College in Walla Walla, Washington, his principal fields of interest are in metamorphic petrology, mineralogy and crystallography, and geochemistry. He has spent several summers in Greenland, a summer in Labrador, and another in Norway, where he studied processes that take place during the formation and subsequent development of the ancient deep continental crust. He is also working on contact metamorphism in the Wallowa Mountains of NE Oregon. Briefly, he also worked as an exploration geologist in New Guinea.

Professor Winter teaches Mineralogy, Igneous and Metamorphic Petrology, Introductory Geology, Environmental Geology, and Geochemistry. Outside the classroom, his interests include travel, mountaineering, hiking, mountain biking, and telemark skiing.

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9788119896622	Kumar	Biophysics and Molecular Biology: Tools and Techniques	520	32

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