

Solutions Engineering Electromagnetics By Inan

The inverse scattering problem is central to many areas of science and technology such as radar and sonar, medical imaging, geophysical exploration and nondestructive testing. This book is devoted to the mathematical and numerical analysis of the inverse scattering problem for acoustic and electromagnetic waves. In this third edition, new sections have been added on the linear sampling and factorization methods for solving the inverse scattering problem as well as expanded treatments of iteration methods and uniqueness theorems for the inverse obstacle problem. These additions have in turn required an expanded presentation of both transmission eigenvalues and boundary integral equations in Sobolev spaces. As in the previous editions, emphasis has been given to simplicity over generality thus providing the reader with an accessible introduction to the field of inverse scattering theory. Review of earlier editions: "Colton and Kress have written a scholarly, state of the art account of their view of direct and inverse scattering. The book is a pleasure to read as a graduate text or to dip into at leisure. It suggests a number of open problems and will be a source of inspiration for many years to come." SIAM Review, September 1994 "This book should be on the desk of any researcher, any student, any teacher interested in scattering theory." Mathematical Intelligencer, June 1994 This book focuses on computational methods to determine the dynamics of large-scale electromagnetic, acoustic, and mechanical systems, including those with many substructures and characterized by an extended range of scales. Examples include large naval and maritime vessels, aerospace vehicles, and densely packed microelectronic and optical integrated circuits (VLSI). The interplay of time and frequency-domain computational and experimental procedures was addressed, emphasizing their relationship and synergy, and indicating mathematics research opportunities.

Balanis' second edition of *Advanced Engineering Electromagnetics* – a global best-seller for over 20 years – covers the advanced knowledge engineers involved in electromagnetic need to know, particularly as the topic relates to the fast-moving, continually evolving, and rapidly expanding field of wireless communications. The immense interest in wireless communications and the expected increase in wireless communications systems projects (antenna, microwave and wireless communication) points to an increase in the number of engineers needed to specialize in this field. In addition, the Instructor Book Companion Site contains a rich collection of multimedia resources for use with this text. Resources include: Ready-made lecture notes in Power Point format for all the chapters. Forty-nine MATLAB® programs to compute, plot and animate some of the wave phenomena Nearly 600 end-of-chapter problems, that's an average of 40 problems per chapter (200 new problems; 50% more than in the first edition) A thoroughly updated Solutions Manual 2500 slides for Instructors are included.

As a slag heap, the result of strip mining, creeps closer to his house in the Ohio hills, fifteen-year-old M. C. is torn between trying to get his family away and fighting for the home they love.

3.1.4 Boundary Conditions -- 3.2 Auxiliary Potentials -- 3.2.1 Magnetic Vector Potential A and Electric Scalar Potential e -- 3.2.2 Electric Vector Potential F and Magnetic Scalar Potential m -- 3.2.3 Important Fundamental Relationships -- 3.3 Wave Equations and Their Solutions -- 3.3.1 Wave Equations for E and H -- 3.3.2 Wave Equations for A , F , and e -- 3.3.3 Solution of the Helmholtz Equation -- 3.3.4 Electric Field Integral Equation -- 3.4 Green's Function -- 3.4.1 Notation Used for Wave Number and Fourier Transform -- 3.4.2 Full Wave Free Space Green's Function -- 3.5 Equivalence Principles -- 3.5.1 Volume Equivalence Principle -- 3.5.2 Huygens' Equivalence Principle -- 3.6 Numerical Solution of Integral Equations -- Problems -- References -- Chapter 4 Capacitance Computations -- 4.1 Multiconductor Capacitance Concepts -- 4.2 Capacitance Models -- 4.2.1 Capacitance Models for Multiconductor Geometries -- 4.2.2 Short Circuit Capacitances -- 4.2.3 Coefficient of Potential Matrix P_p -- 4.2.4 Capacitance of Conductor Systems -- 4.2.5 Elimination of a Floating Conductor Node -- 4.2.6 Floating or Reference Free Capacitances -- 4.3 Solution Techniques for Capacitance Problems -- 4.3.1 Differential Equation (DE) Methods for Capacitance Computations -- 4.4 Meshing Related Accuracy Problems for PEEC Model -- 4.4.1 Impact of Meshing on Capacitances and Stability and Passivity -- 4.5 Representation of Capacitive Currents for PEEC Models -- 4.5.1 Quasistatic Capacitance-based Model -- 4.5.2 Current Source-Based Model for the Capacitances -- 4.5.3 Potential-Based Model for the Capacitances -- Problems -- References -- Chapter 5 Inductance Computations -- 5.1 Loop Inductance Computations -- 5.1.1 Loop Inductance Computation in Terms of Partial Inductances -- 5.1.2 Circuit Model for Partial Inductance Loop

Plunkett's *Almanac of Middle Market Companies 2008* is designed to be time-saving business development tool for professionals, marketers, sales directors, consultants and strategists seeking to understand and reach middle market American companies. It will also be of great use to placement, recruiting and human resources professionals, as well as professionals working in economic development, lending and media. It covers competitive intelligence, market research and business analysis--everything you need to identify and develop strategies for middle market corporations. Coverage includes all major business sectors, from InfoTech to health care to telecommunications and much more. (We have intentionally omitted retail companies and banks.) These profiles and details on over 500 middle market firms are pulled from our extensive company and industry databases. We also include a business glossary and a listing of business contacts, such as industry associations and government agencies. Next, we profile hundreds of leading middle market companies. Our company profiles include complete business descriptions and up to 27 executives by name and title. Purchasers of either the book or PDF version can receive a free copy of the company profiles database on CD-ROM, enabling key word search and export of key information, addresses, phone numbers and executive names with titles for every company profiled.

Despite the dramatic growth in the availability of powerful computer resources, the EM community lacks a comprehensive text on the computational techniques used to solve EM problems. The first edition of *Numerical Techniques in Electromagnetics* filled that gap and became the reference of choice for thousands of engineers, researchers, and students. This third edition of the bestselling text reflects the continuing increase in awareness and use of numerical techniques and incorporates advances and refinements made in recent years. Most notable among these are the improvements made to the standard algorithm for the finite-difference time-domain (FDTD) method and treatment of absorbing boundary conditions in FDTD, finite element, and transmission-line-matrix methods. The author also has added a chapter on the method of lines. *Numerical Techniques in Electromagnetics with MATLAB®, Third Edition* continues to teach readers how to pose, numerically analyze, and solve EM problems, to give them the ability to expand their problem-solving skills using a variety of methods, and to prepare them for research in electromagnetism. Now the Third Edition goes even further toward providing a comprehensive resource that addresses all of the most useful computation methods for EM problems and includes MATLAB code instead of FORTRAN.

This is the first book to offer a comprehensive exploration of new methods in inverse problems in electromagnetics. The book provides systematic descriptions of the most important practical inverse problems, and details new methods to solve them. Also included are descriptions of the properties of inverse problems and known solutions, as well as reviews of the practical implementation of these methods in electric circuit theory and electromagnetic fields theory. This comprehensive collection of modern theoretical ideas and methods to solve inverse problems will be of value to both students and working professionals.

This is the eBook of the printed book and may not include any media, website access codes, or print supplements that may come packaged with the bound book. *Engineering Electromagnetics and Waves* is designed for upper-division college and university engineering students, for those who wish to learn the subject through self-study, and for practicing engineers who need an up-to-date reference text. The student using this text is assumed to have completed typical lower-division courses in physics and mathematics as well as a first course on electrical engineering circuits. This book

provides engineering students with a solid grasp of electromagnetic fundamentals and electromagnetic waves by emphasizing physical understanding and practical applications. The topical organization of the text starts with an initial exposure to transmission lines and transients on high-speed distributed circuits, naturally bridging electrical circuits and electromagnetics. Teaching and Learning Experience This program will provide a better teaching and learning experience—for you and your students. It provides: Modern Chapter Organization Emphasis on Physical Understanding Detailed Examples, Selected Application Examples, and Abundant Illustrations Numerous End-of-chapter Problems, Emphasizing Selected Practical Applications Historical Notes on the Great Scientific Pioneers Emphasis on Clarity without Sacrificing Rigor and Completeness Hundreds of Footnotes Providing Physical Insight, Leads for Further Reading, and Discussion of Subtle and Interesting Concepts and Applications

A business development tool for professionals, marketers, sales directors, consultants and strategists seeking to understand and reach middle market American companies. It covers important business sectors, from InfoTech to health care to telecommunications. Profiles of more than 500 leading US middle market companies. Includes business glossary, a listing of business contacts, indexes and database on CD-ROM.

The general solution to the problem of the radiation of an electric dipole in a magnetically-biased cold plasma is presented. Since the magnetostatic field causes the plasma to be anisotropic, the far field is in general quite complicated. It is found that in general several waves exist, traveling in different directions with different indices of refraction. These waves interfere to produce beats and amplitude modulation, also causing the resultant time-average energy flow to have components in other than the radial direction, a result which is contrary to the isotropic case.

First published just over 50 years ago and now in its Eighth Edition, Bill Hayt and John Buck's Engineering Electromagnetics is a classic text that has been updated for electromagnetics education today. This widely-respected book stresses fundamental concepts and problem solving, and discusses the material in an understandable and readable way. Numerous illustrations and analogies are provided to aid the reader in grasping the difficult concepts. In addition, independent learning is facilitated by the presence of many examples and problems. Important updates and revisions have been included in this edition. One of the most significant is a new chapter on electromagnetic radiation and antennas. This chapter covers the basic principles of radiation, wire antennas, simple arrays, and transmit-receive systems.

Building Services Engineering: Smart and Sustainable Design for Health and Wellbeing covers the design practices of existing engineering building services and how these traditional methods integrate with newer, smarter developments. These new developments include areas such as smart ventilation, smart glazing systems, smart batteries, smart lighting, smart soundproofing, smart sensors and meters. Combined, these all amount to a healthier lifestyle for the people living within these indoor climates. With over one hundred fully worked examples and tutorial questions, Building Services Engineering: Smart and Sustainable Design for Health and Wellbeing encourages the reader to consider sustainable alternatives within their buildings in order to create a healthier environment for users.

Engineering Electromagnetics Springer Science & Business Media

Over 125,000 entries cover 124 scientific and technological fields, including acoustical engineering, cartography graphic arts, microbiology, organic chemistry, radiology, and zoology

Fracture Mechanics of Electromagnetic Materials provides a comprehensive overview of fracture mechanics of conservative and dissipative materials, as well as a general formulation of nonlinear field theory of fracture mechanics and a rigorous treatment of dynamic crack problems involving coupled magnetic, electric, thermal and mechanical field quantities. Thorough emphasis is placed on the physical interpretation of fundamental concepts, development of theoretical models and exploration of their applications to fracture characterization in the presence of magneto-electro-thermo-mechanical coupling and dissipative effects. Mechanical, aeronautical, civil, biomedical, electrical and electronic engineers interested in application of the principles of fracture mechanics to design analysis and durability evaluation of smart structures and devices will find this book an invaluable resource. Contents: Fundamentals of Fracture Mechanics Elements of Electrodynamics of Continua Introduction to Thermoviscoelasticity Overview on Fracture of Electromagnetic Materials Crack Driving Force in Electro-Thermo-Elastodynamic Fracture Dynamic Fracture Mechanics of Magneto-Electro-Thermo-Elastic Solids Dynamic Crack Propagation in Magneto-Electro-Elastic Solids Fracture of Functionally Graded Materials Magneto-Thermo-Viscoelastic Deformation and Fracture Electro-Thermo-Viscoelastic Deformation and Fracture Nonlinear Field Theory of Fracture Mechanics for Paramagnetic and Ferromagnetic Materials Nonlinear Field Theory of Fracture Mechanics for Piezoelectric and Ferroelectric Materials Applications to Fracture Characterization Readership: Graduate students, academic researchers and engineering specialists in fracture mechanics. Keywords: Fracture Mechanics; Electromagnetic Materials; Nonlinear Field Theory; Dynamic Crack Propagation; Driving Force; Coupling; Dissipation; Combined Magnetic, Electric, Thermal and Mechanical Loadings; Energy Release Rate; Essential Work of Fracture Key Features: Offers an overview of the current status and prospects of some most recent research outcomes based on the authors' work Self-contained and unified in presentation, it includes introductory chapters, carefully prepared details and the latest technical advances. It may be used as an essential source of reference for those who wish to have an overview of classical and modern models on this important subject

Plunkett's InfoTech Industry Almanac presents a complete analysis of the technology business, including the convergence of hardware, software, entertainment and telecommunications. This market research tool includes our analysis of the major trends affecting the industry, from the rebound of the global PC and server market, to consumer and enterprise software, to super computers, open systems such as Linux, web services and network equipment. In addition, we provide major statistical tables covering the industry, from computer sector revenues to broadband subscribers to semiconductor industry production. No other source provides this book's easy-to-understand comparisons of growth, expenditures, technologies, imports/exports, corporations,

research and other vital subjects. The corporate profile section provides in-depth, one-page profiles on each of the top 500 InfoTech companies. We have used our massive databases to provide you with unique, objective analysis of the largest and most exciting companies in: Computer Hardware, Computer Software, Internet Services, E-Commerce, Networking, Semiconductors, Memory, Storage, Information Management and Data Processing. We've been working harder than ever to gather data on all the latest trends in information technology. Our research effort includes an exhaustive study of new technologies and discussions with experts at dozens of innovative tech companies. Purchasers of the printed book or PDF version may receive a free CD-ROM database of the corporate profiles, enabling export of vital corporate data for mail merge and other uses.

Engineering Electromagnetics provides a solid foundation in electromagnetics fundamentals by emphasizing physical understanding and practical applications. Electromagnetics, with its requirements for abstract thinking, can prove challenging for students. The authors' physical and intuitive approach has produced a book that will inspire enthusiasm and interest for the material. Benefiting from a review of electromagnetic curricula at several schools and repeated use in classroom settings, this text presents material in a rigorous yet readable manner. FEATURES/BENEFITS Starts with coverage of transmission lines before addressing fundamental laws, providing a smooth transition from circuits to electromagnetics. Emphasizes physical understanding and the experimental bases of fundamental laws. Offers detailed examples and numerous practical end-of-chapter problems, with each problem's topical content clearly identified. Provides historical notes, abbreviated biographies, and hundreds of footnotes to motivate interest and enhance understanding. Back Cover Benefiting from a review of electromagnetics curricula at several schools and repeated use in classroom settings, this text presents material in a comprehensive and practical yet readable manner.

Features: Starts with coverage of transmission lines before addressing fundamental laws, providing a smooth transition from circuits to electromagnetics. Emphasizes physical understanding and the experimental bases of fundamental laws. Offers detailed examples and numerous practical end-of-chapter problems, with each problem's topical content clearly identified. Provides historical notes, abbreviated biographies, and hundreds of footnotes to motivate interest and enhance understanding.

Electromagnetic Boundary Problems introduces the formulation and solution of Maxwell's equations describing electromagnetism. Based on a one-semester graduate-level course taught by the authors, the text covers material parameters, equivalence principles, field and source (stream) potentials, and uniqueness, as well as: Provides analytical solutions of waves in regions with planar, cylindrical, spherical, and wedge boundaries Explores the formulation of integral equations and their analytical solutions in some simple cases Discusses approximation techniques for problems without exact analytical solutions Presents a general proof that no classical electromagnetic field can travel faster than the speed of light Features end-of-chapter problems that increase comprehension of key concepts and fuel additional research Electromagnetic Boundary Problems uses generalized functions consistently to treat problems that would otherwise be more difficult, such as jump conditions, motion of wavefronts, and reflection from a moving conductor. The book offers valuable insight into how and why various formulation and solution methods do and do not work.

This volume is based on the contributions of several authors in electromagnetic waves propagations. Several issues are considered. The contents of most of the chapters are highlighting non classic presentation of wave propagation and interaction with matters. This volume bridges the gap between physics and engineering in these issues. Each chapter keeps the author notation that the reader should be aware of as he reads from chapter to the other.

Written from an engineering perspective, this unique resource describes the practical application of wavelets to the solution of electromagnetic field problems and in signal analysis with an even-handed treatment of the pros and cons. A key feature of this book is that the wavelet concepts have been described from the filter theory point of view that is familiar to researchers with an electrical engineering background. The book shows you how to design novel algorithms that enable you to solve electrically, large electromagnetic field problems using modest computational resources. It also provides you with new ideas in the design and development of unique waveforms for reliable target identification and practical radar signal analysis. The book includes more than 500 equations, and covers a wide range of topics, from numerical methods to signal processing aspects.

Engineers do not have the time to wade through rigorously theoretical books when trying to solve a problem. Beginners lack the expertise required to understand highly specialized treatments of individual topics. This is especially problematic for a field as broad as electromagnetics, which propagates into many diverse engineering fields. The time h

For courses in Electromagnetic Fields & Waves. Electromagnetic Waves continues the applied approach used in the authors' successful Engineering Electromagnetics. The second book is appropriate for a second course in Electromagnetics that covers the topic of waves and the application of Maxwell's equations to electromagnetic events.

In this book, a wide range of different topics related to analytical as well as numerical solutions of problems related to scattering, propagation, radiation, and emission in different medium are discussed. Design of several devices and their measurements aspects are introduced. Topics related to microwave region as well as Terahertz and quasi-optical region are considered. Bi-isotropic metamaterial in optical region is investigated. Interesting numerical methods in frequency domain and time domain for scattering, radiation, forward as well as reverse problems and microwave imaging are summarized. Therefore, the book will satisfy different tastes for engineers interested for example in microwave engineering, antennas, and numerical methods.

Geometrical Theory of Diffraction for Electromagnetic Waves

Electromagnetics is too important in too many fields for knowledge to be gathered on the fly. A deep understanding gained through structured presentation of concepts and practical problem solving is the best way to approach this important subject.

Fundamentals of Engineering Electromagnetics provides such an understanding, distilling the most important theoretical aspects and applying this knowledge to the formulation and solution of real engineering problems. Comprising chapters drawn from the critically acclaimed Handbook of Engineering Electromagnetics, this book supplies a focused treatment that is ideal for specialists in areas such as medicine, communications, and remote sensing who have a need to understand and apply electromagnetic principles, but who are unfamiliar with the field. Here is what the critics have to say about the original work "...accompanied with practical engineering applications and useful illustrations, as well as a good selection of references ... those chapters that are devoted to areas that I am less familiar with, but currently have a need to address, have certainly been valuable to me. This book will therefore provide a useful resource for many engineers working in applied electromagnetics, particularly those in the early stages of their careers." -Alastair R. Ruddle, The IEE Online "...a tour of practical electromagnetics written by industry experts ... provides an excellent tour of the practical side of electromagnetics ... a useful reference for a wide range of electromagnetics problems ... a very useful and well-written compendium..." -Alfy Riddle, IEEE Microwave Magazine Fundamentals of Engineering

Electromagnetics lays the theoretical foundation for solving new and complex engineering problems involving electromagnetics. Fracture Mechanics of Electromagnetic Materials provides a comprehensive overview of fracture mechanics of conservative and dissipative materials, as well as a general formulation of nonlinear field theory of fracture mechanics and a rigorous treatment of dynamic crack problems involving coupled magnetic, electric, thermal and mechanical field quantities. Thorough emphasis is placed on the physical interpretation of fundamental concepts, development of theoretical models and exploration of their applications to fracture characterization in the presence of magneto-electro-thermo-mechanical coupling and dissipative effects. Mechanical, aeronautical, civil, biomedical, electrical and electronic engineers interested in application of the principles of fracture mechanics to design analysis and durability evaluation of smart structures and devices will find this book an invaluable resource. This text provides students with the missing link that can help them master the basic principles of electromagnetics. The concept of vector fields is introduced by starting with clear definitions of position, distance, and base vectors. The symmetries of typical configurations are discussed in detail, including cylindrical, spherical, translational, and two-fold rotational symmetries. To avoid serious confusion between symbols with two indices, the text adopts a new notation: a letter with subscript 1-2 for the work done in moving a unit charge from point 2 to point 1, in which the subscript 1-2 mimics the difference in potentials, while the hyphen implies a sense of backward direction, from 2 to 1. This text includes 300 figures in which real data are drawn to scale. Many figures provide a three-dimensional view. Each subsection includes a number of examples that are solved by examining rigorous approaches in steps. Each subsection ends with straightforward exercises and answers through which students can check if they correctly understood the concepts. A total 350 examples and exercises are provided. At the end of each section, review questions are inserted to point out key concepts and relations discussed in the section. They are given with hints referring to the related equations and figures. The book contains a total of 280 end-of-chapter problems.

This is a textbook designed to provide analytical background material in the area of Engineering Electromagnetic Fields for the senior level undergraduate and preparatory level graduate electrical engineering students. It is also an excellent reference book for researchers in the field of computational electromagnetic fields. The textbook covers — Static Electric and Magnetic Fields: The basic laws governing the Electrostatics, Magnetostatics with engineering examples are presented which are enough to understand the fields and the electric current and charge sources. Dynamic Electromagnetic Fields: The Maxwell's equations in Time-Domain and solutions, the Maxwell's equations in Frequency-Domain and solutions. Extensive approaches are presented to solve partial differential equations satisfying electromagnetic boundary value problems. Foundation to electromagnetic field radiation, guided wave propagation is discussed to expose at the undergraduate level application of the Maxwell's equations to practical engineering problems. Request Inspection Copy

The definitive reference on electromagnetic shielding materials, configurations, approaches, and analyses This reference provides a comprehensive survey of options for the reduction of the electromagnetic field levels in prescribed areas. After an introduction and an overview of available materials, it discusses figures of merit for shielding configurations, the shielding effectiveness of stratified media, numerical methods for shielding analyses, apertures in planar metal screens, enclosures, and cable shielding. Up to date and comprehensive, Electromagnetic Shielding: Explores new and innovative techniques in electromagnetic shielding Presents a critical approach to electromagnetic shielding that highlights the limits of formulations based on plane-wave sources Analyzes aspects not normally considered in electromagnetic shielding, such as the effects of the content of the shielding enclosures Includes references at the end of each chapter to facilitate further study The last three chapters discuss frequency-selective shielding, shielding design procedures, and uncommon ways of shielding—areas ripe for further research. This is an authoritative, hands-on resource for practicing telecommunications and electrical engineers, as well as researchers in industry and academia who are involved in the design and analysis of electromagnetic shielding structures.

Covers employers of various types from 100 to 2,500 employees in size (while the main volume covers companies of 2,500 or more employees). This book contains profiles of companies that are of vital importance to job-seekers of various types. It also enables readers to compare the growth potential and benefit plans of large employers.

This book introduces novel developments in the field of electromagnetic non-destructive testing and evaluation (NDT/E). The topics include electromagnetic ultrasonic guided wave testing, pulsed eddy current testing, remote field eddy current testing, low frequency eddy current testing, metal magnetic memory testing, and magnetic flux leakage testing. Considering the increasing concern about the safety maintenance of critical structures in various industries and everyday life, these topics presented here will be of particular interest to the readers in the NDT/E field. This book covers both theoretical researches and the engineering applications of the electromagnetic NDT technology. It could serve as a valuable reference for college students and relevant NDT technicians. It is also a useful material for qualification training and higher learning for nondestructive testing professionals.

Electromagnetics for Engineering Students starts with an introduction to vector analysis and progressive chapters provide readers with information about dielectric materials, electrostatic and magnetostatic fields, as well as wave propagation in different situations. Each chapter is supported by many illustrative examples and solved problems which serve to explain the principles of the topics and enhance the knowledge of students. In addition to the coverage of classical topics in electromagnetics, the book explains advanced concepts and topics such as the application of multi-pole expansion for scalar and vector potentials, an in depth treatment for the topic of the scalar potential including the boundary-value problems in cylindrical and spherical coordinates systems, metamaterials, artificial magnetic conductors and the concept of negative refractive index. Key features of this textbook include: • detailed and easy-to follow presentation of mathematical analyses and problems • a total of 681 problems (162 illustrative examples, 88 solved problems, and 431 end of chapter problems) • an appendix of mathematical formulae and functions Electromagnetics for Engineering Students is an ideal textbook for first and second year engineering students who are learning about electromagnetism and related mathematical theorems.

Emerging Topics in Computational Electromagnetics in Computational Electromagnetics presents advances in Computational Electromagnetics. This book is designed to fill the existing gap in current CEM literature that only cover the conventional numerical techniques for solving traditional EM problems. The book examines new algorithms, and applications of these algorithms for solving problems of current interest that are not readily amenable to efficient treatment by using the existing techniques. The authors discuss solution techniques for problems arising in nanotechnology, bioEM, metamaterials, as well as multiscale problems. They present techniques that utilize recent advances in computer technology, such as parallel architectures, and the increasing need to solve large and complex problems in a time efficient manner by using highly scalable algorithms.

This study of electromagnetic theory introduces students to a broad range of quantities and concepts, imparting the necessary vector analysis and associated mathematics and reinforcing its teachings with several elementary field problems. Based on circuit theory rather than on the classical force-relationship approach, the text uses the theory of electric circuits to provide a system of experiments already familiar to the

electrical engineer; a series of field concepts are then introduced as a logical extension of circuit theory. Virtually unobtainable elsewhere, this text was written by a prominent professor whose recognition includes the prestigious IEEE Electromagnetics Award. It is appropriate for advanced undergraduate and graduate students with a background in calculus and circuit theory. 176 Figures. 9 Tables.

This text not only provides students with a good theoretical understanding of electromagnetic field equations but it also treats a large number of applications. No topic is presented unless it is directly applicable to engineering design or unless it is needed for the understanding of another topic. Included in this new edition are more than 400 examples and exercises, exercising every topic in the book. Also to be found are 600 end-of-chapter problems, many of them applications or simplified applications. A new chapter introducing numerical methods into the electromagnetic curriculum discusses the finite element, finite difference and moment methods.

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