Electromagnetic Field Theory For Engineers And Physicists 1st Edition

Theory and Applications
Lines and Electromagnetic Fields for Engineers
Engineering Electromagnetics
A Problem Solving Approach
Innovative Approaches and Pedagogical Strategies
Engineering Electromagnetics
Electromagnetic Fields (Theory and Problems)
Electromagnetic Field Theory, 2e
The Commonwealth and International Library: Applied Electricity and Electronics Division
Bioengineering and Biophysical Aspects of Electromagnetic Fields
Electromagnetic Field Theory
Electromagnetic Field Theory and Wave Propagation
Relativistic Field Theory for Microwave Engineers
Theory of Electromagnetic Wave Propagation
Microwave and mmWave Engineering with Generalized Macroscopic Electrodynamics
The Theory of the Electromagnetic Field
Electromagnetic Field Theory
Electromagnetics, Volume 1 (BETA)
Field Theory of Guided Waves
Electromagnetic Theory
From Classical Theory to HF Radiation Effects
Electromagnetism for Electronic Engineers
Electromagnetics for Electrical Machines
Electromagnetic Field Theory and Transmission Lines
Electromagnetic Field Theories for Engineering
Electromagnetic Field Theory
Handbook of Engineering Electromagnetics
Electromagnetic Fields
Electromagnetic Field Theory for Engineers and Physicists
Electromagnetic Fields
Engineering Electromagnetic Fields and Waves
Electromagnetic Field Theory
Electromagnetic Field Theory
Electromagnetic Frontier Theory Exploration
Numerical Analysis of Electromagnetic Fields
Engineering Field Theory
A Collection of Problems
Teaching Electromagnetics

ELIEZER HUGHES

Theory and Applications CRC Press
Self-contained treatment examines operational definition of charge and current; specification of arbitrary distributions of charge and current; definition of electromagnetic field and effect on general charge distributions; electric field produced by static charges; magnetic induction field produced by steady currents; Maxwell's equations in vacuum; much more. 1981 edition.

Lines and Electromagnetic Fields for Engineers
Electromagnetic Field Theory for Engineers and Physicists Presents the basic concepts suitable for Engineering and Science Students. This text deals with the useful areas of vector analysis, basic principles of Electrostatics, Magnetostatics, Conduction of Current, Polarization in Dielctric material, Magnetic behavior in different materials and Different types of Capacitor & Inductance.

Engineering Electromagnetics Springer Science & Business Media
Reviews the fundamental concepts behind the theory and computation of electromagnetic fields The book is divided in two parts. The first part covers both fundamental theories (such as vector analysis, Maxwell's equations, boundary condition, and transmission line theory) and advanced topics (such as wave transformation, addition theorems, and fields in layered media) in order to benefit students at all levels. The second part of the book covers the major computational methods for numerical analysis of electromagnetic fields for engineering applications. These methods include the three fundamental approaches for numerical analysis of electromagnetic fields: the finite difference method (the finite difference time-domain method in particular), the finite element method, and the integral equation-based moment method. The second part also examines fast algorithms for solving integral equations and hybrid techniques that combine different numerical methods to seek more efficient solutions of complicated electromagnetic problems. Theory and Computation of Electromagnetic Fields, Second Edition: Provides the foundation necessary for graduate students to learn and understand more advanced topics Discusses electromagnetic analysis in rectangular, cylindrical and spherical coordinates Covers computational electromagnetics in both frequency and time domains Includes new and updated homework problems and examples Theory and Computation of Electromagnetic Fields, Second Edition is written for advanced undergraduate and graduate level electrical engineering students. This book can also be used as a reference for professional engineers interested in learning about analysis and computation skills.

A Problem Solving Approach PHI Learning Pvt. Ltd.
The book Electromagnetic Field Theory caters to the students of BE/BTech Electronics and Communication Engineering, Electrical and Electronics Engineering, and Electronic Instrumentation Engineering, as electromagnetics is an integral part of their curricula. It covers a wide range of topics that deal with various physical and mathematical concepts, including vector functions, coordinate systems, integration and differentiation, complex numbers, and phasors. The book helps in understanding the electric and magnetic fields on different charge and current distributions, such as line, surface, and volume. It also explains the electromagnetic behaviour of waves, fields in transmission lines, and radiation in antennas. A number of electromagnetic applications are also included to develop the interest of students. SALIENT FEATURES • Simple and easy-to-follow text • Complete coverage of the subject as per the syllabi of most universities • Lucid, well-explained concepts with clear examples • Relevant illustrations for better understanding and retention • Some of the illustrations provide three-dimensional view for in-depth knowledge • Numerous mathematical examples for full clarity of concepts • Chapter objectives at the beginning of each chapter for its overview • Chapter-end summary and exercises for quick review and to test your knowledge

Innovative Approaches and Pedagogical Strategies WIT Press
This textbook is intended for a course in electromagnetism for upper undergraduate and graduate students. The main concepts and laws of classical macroscopic electrodynamics and initial information about generalized laws of modern electromagnetics are discussed, explaining some paradoxes of the modern theory. The reader then gets acquainted with electrodynamics methods of field analysis on the basis of wave equation solution. Emission physics are considered using an example of the Huygens-Fresnel-Kirchhoff canonic principle. The representation about strict electrodynamics task statement on the base of Maxwell equations, boundary conditions, emission conditions and the condition on the edge is given. Different classes of approximate boundary conditions are presented, which essentially simplify understanding of process physics. The canonic Fresnel functions are given and their generalization on the case of anisotropic impedance. The free waves in closed waveguides and in strip-slotted and edge-dielectric transmission lines are described. A large number of Mathcad programs for illustration of field patterns and its properties in different guiding structures are provided. The material is organized for self-study as well as classroom use.

Engineering Electromagnetics Courier Dover Publications
This book is an electromagnetics classic. Originally published in 1941, it has been used by many generations of students, teachers, and researchers ever since. Since it is classic electromagnetics, every chapter continues to be referenced to this day. This classic reissue contains the entire, original edition first published in 1941. Additionally, two new forewords by Dr. Paul E. Gray (former MIT President and colleague of Dr. Stratton) and another by Dr. Donald G. Dudley, Editor of the IEEE Press Series on E/M Waves on the significance of the book's contribution to the field of Electromagnetics.

Electromagnetic Fields (Theory and Problems) Walter de Gruyter GmbH & Co KG
Clear, coherent work for graduate-level study discusses the Maxwell field equations, radiation from wire antennas, wave aspects of radio-astronomical antenna theory, the Doppler effect, and more.

Electromagnetic Field Theory, 2e John Wiley & Sons
A four year Electrical and Electronic engineering curriculum normally contains two modules of electromagnetic field theories during the first two years. However, some curricula do not have enough slots to accommodate the two modules. This book, Electromagnetic Field Theories, is designed for Electrical and Electronic engineering undergraduate students to provide fundamental knowledge of electromagnetic fields and waves in a structured manner. A comprehensive fundamental knowledge of electric and magnetic fields is required to understand the working principles of generators, motors and transformers. This knowledge is also necessary to analyze transmission lines, substations, insulator flashover mechanism, transient phenomena, etc. Recently, academics and researches are working for sending electrical power to a remote area by designing a suitable antenna. In this case, the knowledge of electromagnetic fields is considered as important tool.

The Commonwealth and International Library: Applied Electricity and Electronics Division CRC Press
Electromagnetic Field Theory is a single textbook catering to the electromagnetic field fundamentals for B.E./B.Tech. in Electronics and Communication Engineering, Electronics and Telecommunication Engineering, Electrical and Electronics Engineering and M.Sc. (Electronics) of various Indian Universities. The primary goal of the text is to provide deep knowledge on the subject with rich pedagogy and it is also a useful reference for GATE, UPSC aspirants. The book provides an organized and balanced presentation to cover the entire syllabus of Electromagnetic Field Theory. Each Chapter of the book begins with a brief introduction, contains numerous practice problems and ends with review questions. The fundamental concepts and related derivations with necessary illustrations are provided in a simple and comprehensive manner to make the students understand the subject.

Bioengineering and Biophysical Aspects of Electromagnetic Fields Cambridge University Press
Lines and Electromagnetic Fields for Engineers takes an unusual approach by emphasizing engineering applications (transmission lines, propagation, and waveguides) while downplaying static fields. This well written text is outstanding for its efforts to connect electromagnetic field analysis with subjects that students

know, e.g. circuit theory, and for emphasizing practical aspects of transmission lines and waveguides. The text is organized along a historical line in order that students might better appreciate the thinking and synthesis methods of the pioneers in the field. Miner's method of presentation have many advantages over traditional approaches, building on student's knowledge of circuits by beginning with a discussion of transmission lines. Numerous examples and figures illustrate presented concepts and provide a thorough understanding of the basic experiments of electromagnetic field theory and the mathematical description of the results of those experiments. All examples are worked completely with worded explanations of what is being done. Each section includes exercised to illustrate presented concepts, and end-of-chapter exercises are also included throughout.

Electromagnetic Field Theory McGraw-Hill Education
Electromagnetic Field Theory and Transmission Lines is ideal for a single semester, first course on Electromagnetic Field Theory (EMFT) at the undergraduate level. This book uses diagrammatic representations and real life examples to explain the fu
Electromagnetic Field Theory and Wave Propagation Springer Science & Business Media
Professor Jean Van Bladel, an eminent researcher and educator in fundamental electromagnetic theory and its application in electrical engineering, has updated and expanded his definitive text and reference on electromagnetic fields to twice its original content. This new edition incorporates the latest methods, theory, formulations, and applications that relate to today's technologies. With an emphasis on basic principles and a focus on electromagnetic formulation and analysis, Electromagnetic Fields, Second Edition includes detailed discussions of electrostatic fields, potential theory, propagation in waveguides and unbounded space, scattering by obstacles, penetration through apertures, and field behavior at high and low frequencies.
Relativistic Field Theory for Microwave Engineers CRC Press
This book provides students with a thorough theoretical understanding of electromagnetic field equations and it also treats a large number of applications. The text is a comprehensive two-semester textbook. The work treats most topics in two steps – a short, introductory chapter followed by a second chapter with in-depth extensive treatment; between 10 to 30 applications per topic; examples and exercises throughout the book; experiments, problems and summaries. The new edition includes: modifications to about 30-40% of the end of chapter problems; a new introduction to electromagnetics based on behavior of charges; a new section on units; MATLAB tools for solution of problems and demonstration of subjects; most chapters include a summary. The book is an undergraduate textbook at the Junior level, intended for required classes in electromagnetics. It is written in simple terms with all details of derivations included and all steps in solutions listed. It requires little beyond basic calculus and can be used for self-study. The wealth of examples and alternative explanations makes it very approachable by students. More than 400 examples and exercises, exercising every topic in the book Includes 600 end-of-chapter problems, many of them applications or simplified

applications Discusses the finite element, finite difference and method of moments in a dedicated chapter
Theory of Electromagnetic Wave Propagation S. Chand Publishing
Electromagnetic Fields
Microwave and mmWave Engineering with Generalized Macroscopic Electrodynamics John Wiley & Sons
Numerical methods for solving boundary value problems have developed rapidly. Knowledge of these methods is important both for engineers and scientists. There are many books published that deal with various approximate methods such as the finite element method, the boundary element method and so on. However, there is no textbook that includes all of these methods. This book is intended to fill this gap. The book is designed to be suitable for graduate students in engineering science, for senior undergraduate students as well as for scientists and engineers who are interested in electromagnetic fields. Objective Numerical calculation is the combination of mathematical methods and field theory. A great number of mathematical concepts, principles and techniques are discussed and many computational techniques are considered in dealing with practical problems. The purpose of this book is to provide students with a solid background in numerical analysis of the field problems. The book emphasizes the basic theories and universal principles of different numerical methods and describes why and how different methods work. Readers will then understand any methods which have not been introduced and will be able to develop their own new methods. Organization Many of the most important numerical methods are covered in this book. All of these are discussed and compared with each other so that the reader has a clear picture of their particular advantage, disadvantage and the relation between each of them. The book is divided into four parts and twelve chapters.
John Wiley & Sons
Engineers and scientists who develop and install electronic devices and circuits need to have a solid understanding of electromagnetic theory and the electromagnetic behavior of devices and circuits. In particular, they must be well-versed in electromagnetic compatibility, which minimizes and controls the side effects of interconnected electric dev
The Theory of the Electromagnetic Field Alpha Science International Limited
After a brief introduction into the theory of electromagnetic fields and the definition of the field quantities the book teaches the analytical solution methods of Maxwell's equations by means of several characteristic examples. The focus is on static and stationary electric and magnetic fields, quasi stationary fields, and electromagnetic waves. For a deeper understanding, the many depicted field patterns are very helpful. The book offers a collection of problems and solutions which enable the reader to understand and to apply Maxwell's theory for a broad class of problems including classical static problems right up to waveguide eigenvalue problems.
Electromagnetic Field Theory John Wiley & Sons
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
Electromagnetics, Volume 1 (BETA) Springer
Electromagnetics for Electrical Machines offers a comprehensive yet accessible treatment of the linear theory of electromagnetics and its application to the design of electrical machines. Leveraging valuable classroom insight gained by the authors during their impressive and ongoing teaching careers, this text emphasizes concepts rather than numerical methods, providing presentation/project problems at the end of each chapter to enhance subject knowledge. Highlighting the essence of electromagnetic field (EMF) theory and its correlation with electrical machines, this book: Reviews Maxwell's equations and scalar and vector potentials Describes the special cases leading to the Laplace, Poisson's, eddy current, and wave equations Explores the utility of the uniqueness, generalized Poynting, Helmholtz, and approximation theorems Discusses the Schwarz–Christoffel transformation, as well as the determination of airgap permeance Addresses the skin effects in circular conductors and eddy currents in solid and laminated iron cores Contains examples relating to the slot leakage inductance of rotating electrical machines, transformer leakage inductance, and theory of hysteresis machines Presents analyses of EMFs in laminated-rotor induction machines, three-dimensional field analyses for three-phase solid rotor induction machines, and more Electromagnetics for Electrical Machines makes an ideal text for postgraduate-level students of electrical engineering, as well as of physics and electronics and communication engineering. It is also a useful reference for research scholars concerned with problems involving electromagnetics.
Field Theory of Guided Waves Bookboon
The evaluation of electromagnetic field coupling to transmission lines is an important problem in electromagnetic compatibility. Traditionally, use is made of the TL approximation which applies to uniform transmission lines with electrically small cross-sectional dimensions, where the dominant mode of propagation is TEM. Antenna-mode currents and higher-order modes appearing at higher frequencies are neglected in TL theory. The use of the TL approximation has permitted to solve a large range of problems (e.g. lightning and EMP interaction with power lines). However, the continual increase in operating frequency of products and higher frequency sources of disturbances (such as UWB systems) makes that the TL basic assumptions are no longer acceptable for a certain number of applications. In the last decade or so, the generalization of classical TL theory to take into account high frequency effects has emerged as an important topic of study in electromagnetic compatibility. This effort resulted in the elaboration of the so-called 'generlized' or 'full-wave' TL theory, which incorporates high frequency radiation effects, while keeping the relative simplicity of TL equations. This book is organized in two main parts. Part I presents consolidated knowledge of classical transmission line theory and different field-to-transmission line coupling models. Part II presents different approaches developed to generalize TL Theory.