

# Electrical Engineering Material By J B Gupta

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 Pragmatic Electrical Engineering  
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## HAYDEN CABRERA

**Semiconductor-On-Insulator Materials for Nanoelectronics Applications** Cambridge University Press

The Industrial Electronics Handbook, Second Edition combines traditional and newer, more specialized knowledge that will help industrial electronics engineers develop practical solutions for the design and implementation of high-power applications. Embracing the broad technological scope of the field, this collection explores fundamental areas, including analog and digital circuits, electronics, electromagnetic machines, signal processing, and industrial control and communications systems. It also facilitates the use of intelligent systems—such as neural networks, fuzzy systems, and evolutionary methods—in terms of a hierarchical structure that makes factory control and supervision more efficient by addressing the needs of all production components. Enhancing its value, this fully updated collection presents research and global trends as published in the IEEE Transactions on Industrial Electronics Journal, one of the largest and most respected publications in the field. Fundamentals of Industrial Electronics covers the essential areas that form the basis for the field. This volume presents the basic knowledge that can be applied to the other sections of the handbook. Topics covered include: Circuits and signals Devices Digital circuits Digital and analog signal processing Electromagnetics Other volumes in the set: Power Electronics and Motor Drives Control and Mechatronics Industrial Communication Systems Intelligent Systems

**Pragmatic Electrical Engineering** John Wiley & Sons

A one-stop desk reference, for engineers involved in the use of engineered materials across engineering and electronics, this book will not gather dust on the shelf. It brings together the essential professional reference content from leading international contributors in the field. Material ranges from basic to advanced topics, including materials and process selection and explanations of properties of metals, ceramics, plastics and composites. A hard-working desk reference, providing all the essential material needed by engineers on a day-to-day basis Fundamentals, key techniques, engineering best practice and rules-of-thumb together in one quick-reference sourcebook Definitive content by the leading authors in the field, including Michael Ashby, Robert Messler, Rajiv Asthana and R.J. Crawford

**Electrical Properties of Oxide Materials** Springer

This book offers a concise introduction to the analysis of electrical transients aimed at students who have completed introductory circuits and freshman calculus courses. While it is written under the assumption that these students are encountering transient electrical circuits for the first time, the mathematical and physical theory is not 'watered-down.' That is, the analysis of both lumped and continuous (transmission line) parameter circuits is performed with the use of differential equations (both ordinary and partial) in the time domain, and the Laplace transform. The transform is fully developed in the book for readers who are not assumed to have seen it before. The use of singular time functions (unit step and impulse) is addressed and illustrated through detailed examples. The appearance of paradoxical circuit situations, often ignored in many textbooks (because they are, perhaps, considered 'difficult' to explain) is fully embraced as an opportunity to challenge students. In addition, historical commentary is included throughout the book, to combat the misconception that the material in engineering textbooks was found engraved on Biblical stones, rather than painstakingly discovered by people of genius who often went down many wrong paths before finding the right one. MATLAB® is used throughout the book, with simple codes to quickly and easily generate transient response curves.

**Science for Engineering** Elsevier

With asynchronous circuit design becoming a powerful tool in the development of new digital systems, circuit designers are expected to have asynchronous design skills and be able to leverage

them to reduce power consumption and increase system speed. This book walks readers through all of the different methodologies of asynchronous circuit design, emphasizing practical techniques and real-world applications instead of theoretical simulation. The only guide of its kind, it also features an FTP site complete with support materials. Market: Electrical Engineers, Computer Scientists, Device Designers, and Developers in industry. An Instructor Support FTP site is available from the Wiley editorial department.

**Fundamentals of Industrial Electronics** Firewall Media

Explore the diverse electrical engineering application of polymer composite materials with this in-depth collection edited by leaders in the field Polymer Composites for Electrical Engineering delivers a comprehensive exploration of the fundamental principles, state-of-the-art research, and future challenges of polymer composites. Written from the perspective of electrical engineering applications, like electrical and thermal energy storage, high temperature applications, fire retardance, power cables, electric stress control, and others, the book covers all major application branches of these widely used materials. Rather than focus on polymer composite materials themselves, the distinguished editors have chosen to collect contributions from industry leaders in the area of real and practical electrical engineering applications of polymer composites. The book's relevance will only increase as advanced polymer composites receive more attention and interest in the area of advanced electronic devices and electric power equipment. Unique amongst its peers, Polymer Composites for Electrical Engineering offers readers a collection of practical and insightful materials that will be of great interest to both academic and industrial audiences. Those resources include: A comprehensive discussion of glass fiber reinforced polymer composites for power equipment, including GIS, bushing, transformers, and more) Explorations of polymer composites for capacitors, outdoor insulation, electric stress control, power cable insulation, electrical and thermal energy storage, and high temperature applications A treatment of semi-conductive polymer composites for power cables In-depth analysis of fire-retardant polymer composites for electrical engineering An examination of polymer composite conductors Perfect for postgraduate students and researchers working in the fields of electrical, electronic, and polymer engineering, Polymer Composites for Electrical Engineering will also earn a place in the libraries of those working in the areas of composite materials, energy science and technology, and nanotechnology.

**Finite Element Analysis of Electrical Machines** Springer

This book is the collection of the contributions offered at the International Symposium on Electromagnetic Fields in Electrical Engineering, ISEF '87, held in Pavia, Italy, in September 1987. The Symposium was attended by specialists engaged in both theoretical and applied research in low-frequency electromagnetism. The charming atmosphere of Pavia and its ancient university provided a very effective environment to discuss the latest results in the field and, at the same time, to enjoy the company of colleagues and friends coming from over 15 countries. The contributions have been grouped into 7 chapters devoted to fundamental problems, computer programs, transformers, rotating electrical machines, mechanical and thermal effects, various applications and synthesis, respectively. Such a classification is merely to help the reader because a few papers could be put in several chapters. Over the past two decades electromagnetic field computations have received a big impulse by the large availability of digital computers with better and better performances in speed and capacity. Many various methods have been developed but not all of them appear convenient enough for practical engineering use. In fact, the technical and industrial challenges set some principal attributes and criteria for good computation methods. They should be relatively easy to use, fit into moderately sized computers, yield useful design data, maintain flexibility with minimum cost in time and effort.

**Electric Energy Systems** CRC Press

Essentials of Electrical and Computer Engineering introduces technologies such as MEMS (Microelectromechanical Systems) to illustrate how modern technologies are interdisciplinary.

Presenting modularized coverage of a wide range of topics to afford instructors great flexibility, *Essentials of Electrical and Computer Engineering*, is an exceptionally strong teaching tool—gently yet thoroughly introducing students to the full spectrum of fundamental topics; offering strong pedagogical support and clear explanations, and never relying on superficial, cursory explanations. This text may also be useful for the reader who wishes to use a self-study approach to learn the fundamentals of electrical and computer engineering.

[An Introduction to Electrical Engineering Materials](#) Springer Science & Business Media

An advanced level textbook covering geometric, chemical, and electronic structure of electronic materials, and their applications to devices based on semiconductor surfaces, metal-semiconductor interfaces, and semiconductor heterojunctions. Starting with the fundamentals of electrical measurements on semiconductor interfaces, it then describes the importance of controlling macroscopic electrical properties by atomic-scale techniques. Subsequent chapters present the wide range of surface and interface techniques available to characterize electronic, optical, chemical, and structural properties of electronic materials, including semiconductors, insulators, nanostructures, and organics. The essential physics and chemistry underlying each technique is described in sufficient depth with references to the most authoritative sources for more exhaustive discussions, while numerous examples are provided throughout to illustrate the applications of each technique. With its general reading lists, extensive citations to the text, and problem sets appended to all chapters, this is ideal for students of electrical engineering, physics and materials science. It equally serves as a reference for physicists, material science and electrical and electronic engineers involved in surface and interface science, semiconductor processing, and device modeling and design. This is a coproduction of Wiley and IEEE \* Free solutions manual available for lecturers at [www.wiley-vch.de/supplements/](http://www.wiley-vch.de/supplements/)

[A Textbook of Electrical Engineering Materials](#) McGraw-Hill Education

A Textbook for the students of B.Sc.(Engg.), B.E., B.Tech., AMIE and Diploma Courses. A new chapter on ""Semiconductor Fabrication Technology and Miscellaneous Semiconductor Devices"" had been included and additional self-assessment questions with answers and additional worked examples had been provided at the end of the BOOK.

[Electromagnetism for Engineers](#) S. Chand Publishing

This reference text offers the reader a comprehensive insight into recent research breakthroughs in blockchain, the Internet of Things (IoT), artificial intelligence and material structure and hybrid technologies in their integrated platform, while also emphasizing their sustainability aspects. The text begins by discussing recent advances in energy materials and energy conversion materials using machine learning, as well as recent advances in optoelectronic materials for solar energy applications. It covers important topics including advancements in electrolyte materials for solid oxide fuel cells, advancements in composite materials for Li-ion batteries, progression of materials for supercapacitor applications, and materials progression for thermochemical storage of low-temperature solar thermal energy systems. This book: Discusses advances in blockchain, the Internet of Things, artificial intelligence, material structure and hybrid technologies Covers intelligent techniques in materials progression for sensor development and energy material characterization using signal processing Examines the integration of phase change materials in construction for thermal energy regulation in new buildings Explores the current happenings in technology in conjunction with basic laws and mathematical models Connecting advances in engineering materials with the use of smart techniques including artificial intelligence, machine learning and Internet of Things (IoT) in a single volume, this text will be especially useful for graduate students, academic researchers and professionals in the fields of electrical engineering, electronics engineering, materials science, mechanical engineering and computer science.

[Transients for Electrical Engineers](#) Butterworth-Heinemann

This is a book for electrical and electronic engineers, not for materials scientists. Every explanation is rendered in its simplest and clearest form and as many relevant examples are included as possible. At every point, the author makes clear the direct relevance of every topic to the reader's main course of study: electrical and electronic engineering. The central theme is that the type of bonding in a solid not only controls its electrical properties but also, and just as directly, its mechanical properties and how things are made from it. Thus the reason why a copper wire can conduct electricity is exactly the same reason it can be drawn into a wire in the first place. The reason why a piece of porcelain does not conduct electricity is the same as why it cannot be rolled into its final shape as copper could and thus has to be made directly. This common origin of electrical and mechanical properties dictates the structure of the book.

[Principles of Power Electronics](#) Cambridge University Press

The Hybrid Microcircuit Technology Handbook integrates the many diverse technologies used in the design, fabrication, assembly, and testing of hybrid segments crucial to the success of producing reliable circuits in high yields. Among these are: resistor trimming, wire bonding, die attachment, cleaning, hermetic sealing, and moisture analysis. In addition to thin films, thick films, and assembly processes, important chapters on substrate selections, handling (including electrostatic discharge), failure analysis, and documentation are included. A comprehensive chapter of design guidelines will be of value to materials and process engineers, chemists, and electrical engineers who design and test hybrid circuits.

[Electrical Engineering Materials](#) Springer Science & Business Media

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Stephen J. Chapman is a leading author in the area of machines. He brings his expertise to the table again in *An Introduction to Electric Machinery and Power Systems*. This text is designed to be used in a course that combines machinery and power systems into one semester. Chapman's new book is designed to be flexible and allow instructors to choose chapters "a la carte", so the instructor controls the emphasis. Chapman has written a book that gives students what they need to know to be real-world engineers. It focuses on principles and teaches students how to use information as opposed to do a lot of calculations that would rarely be done by a practicing engineer. He compresses the material by focusing on its essence, underlying principles. Matlab is used throughout the book in examples and problems.

[Electric Machinery and Power System Fundamentals](#) CRC Press

In *Finite Element Analysis of Electrical Machines* the author covers two-dimensional analysis, emphasizing the use of finite elements to perform the most common calculations required of machine designers and analysts. The book explains what is inside a finite element program, and how the finite element method can be used to determine the behavior of electrical machines. The material is tutorial and includes several completely worked out examples. The main illustrative examples are synchronous and induction machines. The methods described have been used successfully in the design and analysis of most types of rotating and linear machines. Audience: A valuable reference source for academic researchers, practitioners and designers of electrical machinery.

[Pragmatic Electrical Engineering](#) John Wiley & Sons

This book is also available through the Introductory Engineering Custom Publishing System. If you are interested in creating a course-pack that includes chapters from this book, you can get further information by calling 212-850-6272 or sending email inquiries to [engineer@wiley.com](mailto:engineer@wiley.com). The authors offer a set of objectives at the beginning of each chapter plus a clear, concise description of abstract concepts. Focusing on preparing students to solve practical problems, it includes numerous colorful illustrative examples. Along with updated material on MOSFETS, the CRO for use in lab work, a thorough treatment of digital electronics and rapidly developing areas of electronics, it contains an expansive glossary of new terms and ideas.

[Electronic Basis of the Strength of Materials](#) CRC Press

[Electrical Engineering Materials](#)

[Surfaces and Interfaces of Electronic Materials](#) Springer Science & Business Media

Comprehensive coverage of superconductivity from the Wiley Encyclopedia of Electrical and Electronics Engineering Engineering Superconductivity features fifty articles selected from the Wiley Encyclopedia of Electrical and Electronics Engineering, the one truly indispensable reference for electrical engineers. Superconductor technology has made highly advanced experiments possible in chemistry, biochemistry, particle physics, and health sciences, and introduced new applications currently in use in fields from medicine to cellular communications. Taken together, these articles—written by acknowledged experts in the field—provide the most complete and in-depth accounting of superconductivity in existence. The book brings together a wealth of information that would not be available to those who do not have access to the full 24-volume encyclopedia. This thorough survey looks at the application of superconductors from an engineer's practical perspective rather than a theoretical approach. Engineering Superconductivity provides full coverage of the fundamentals of superconducting behavior and explains the properties and fabrication methods of commercially produced superconductors. Up-to-date material on superconductor applications as well as competing technologies is included. The fifty articles presented here are divided into three sections: Superconductivity and magnetism Superconductors Applications and related technology Engineering Superconductivity is a complete and up-to-date reference for engineers, physicists, chemists, materials scientists, and anyone working with superconductors.

[Fuzzy Logic with Engineering Applications](#) Electrical Engineering Materials

Problems after each chapter Electrical Engineering Materials Properties of materials for electrical engineers

Artificial Intelligence, Internet of Things (IoT) and Smart Materials for Energy Applications

Problems after each chapter

[APPLIED ELECTRICITY A TEXT-BK](#) Prentice Hall

Part 1 is particularly concerned with physical properties, electrical ageing and modeling with topics such as the physics of charged dielectric materials, conduction mechanisms, dielectric relaxation, space charge, electric ageing and life end models and dielectric experimental characterization. Part 2 concerns some applications specific to dielectric materials: insulating oils for transformers, electrorheological fluids, electrolytic capacitors, ionic membranes, photovoltaic conversion, dielectric thermal control coatings for geostationary satellites, plastics recycling and piezoelectric polymers.

[Polymer Composites for Electrical Engineering](#) John Wiley & Sons

This 2003 book relates the complete set of strength characteristics of constituent atoms to their electronic structures. These relationships require knowledge of both the chemistry and physics of materials. The book uses both classical and quantum mechanics, since both are needed to describe these properties, and begins with short reviews of each. Following these reviews, the three major branches of the strength of materials are given their own sections. They are: the elastic stiffnesses; the plastic responses; and the nature of fracture. This work will be of great value to academic and industrial research workers in the sciences of metallurgy, ceramics, microelectronics and polymers. It will also serve well as a supplementary text for the teaching of solid mechanics.