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Fundamentals of Engineering Electromagnetics
Electromagnetic Fields *Electromagnetics for Electrical Machines* **The Summary of Engineering Research Fundamentals of Analogue and Digital Communication Systems Novel Materials Processing by Advanced Electromagnetic Energy Sources Electromagnetic Pump and Hardware Development for Organs-on-chips Advanced Soil Dynamics and Earthquake Engineering FUNDAMENTALS OF SOIL DYNAMICS AND EARTHQUAKE ENGINEERING Applications of Computing, Automation and Wireless Systems in Electrical Engineering Scanning Probe Microscopy Micro-Electronics and Telecommunication Engineering**
Department of Electrical and Computer Engineering Scientific Computing in Electrical Engineering Tribological Research and Design for Engineering Systems 30 Past SSC Junior Engineer General Awareness Solved Papers (Civil/ Electrical/ Mechanical) AI for Big Data-Based Engineering Applications from Security Perspectives Interdisciplinary Approaches to Information Systems and Software

Engineering The Complete Book on Rubber Processing and Compounding Technology (with Machinery Details) 2nd Revised Edition Bridging Circuits and Fields Handbook of Micro/Nano Tribology **Peterson's Graduate Programs in Engineering and Applied Sciences, 1996 Tribology and Mechanics of Magnetic Storage Devices Introduction to Tribology Orthogonal Functions in Systems and Control** Materials and Surface Engineering Handbook of Nanomaterials Properties Handbook of Performability Engineering International Advanced Researches & Engineering Congress 2017 Proceeding Book 4th International Conference on Nanotechnologies and Biomedical Engineering Peterson's Guide to Graduate Programs in Engineering and Applied Sciences **Applied Scanning Probe Methods IV Modern Tribology Handbook, Two Volume Set Indian Engineering and Industries Guide Applied Scanning Probe Methods III Applied Scanning Probe Methods II SOUVENIR of 2nd International Science Congress (ISC-2012) Springer Handbook of Nanotechnology Advances in Renewable Energy and Electric Vehicles Principles and**

Applications of Tribology

Fundamentals of Engineering Electromagnetics
Apr 29 2023 *Fundamentals of Engineering Electromagnetics* is designed for an undergraduate course in electromagnetism for students of electrical and electronics and communication engineering. The book aims to provide students with understanding of the fundamentals of electromagnetic fields and their applications in electrical engineering and related domains.

Fundamentals of Analogue and Digital Communication Systems Dec 25 2022 The book covers fundamentals and basics of engineering communication theory. It presents right mix of explanation of mathematics (theory) and explanation. The book discusses both analogue communication and digital communication in details. It covers the subject of 'classical' engineering communication starting from the very basics of the subject to the beginning of more advanced areas. It also covers all the basic mathematics which is required to read the text. It covers a two semester course as an undergraduate text and some topics in master's course as well.

Principles and Applications of Tribology

Dec 21 2019 This fully updated Second Edition provides the reader with the solid understanding of tribology which is essential to engineers involved in the design of, and ensuring the reliability of, machine parts and systems. It moves from basic theory to practice, examining tribology from the integrated viewpoint of mechanical engineering, mechanics, and materials science. It offers detailed coverage of the mechanisms of material wear, friction, and all of the major lubrication techniques - liquids, solids, and gases - and examines a wide range of both traditional and state-of-the-art applications. For this edition, the author has included updates on friction, wear and lubrication, as well as completely revised material including the latest breakthroughs in tribology at the nano- and micro- level and a revised introduction to nanotechnology. Also included is a new chapter on the emerging field of green tribology and biomimetics.

Tribology and Mechanics of Magnetic

Storage Devices Jun 07 2021 Since January 1990, when the first edition of this first-of-a-kind book appeared, there has been much experimental and theoretical progress in the multi disciplinary subject of tribology and mechanics of magnetic storage devices. The subject has matured into a rigorous discipline, and many university tribology and mechanics courses now routinely contain material on magnetic storage devices. The major growth in

the subject has been on the micro- and nanoscale aspects of tribology and mechanics. Today, most large magnetic storage industries use atomic force microscopes to image the magnetic storage components. Many companies use variations of AFMs such as friction force microscopes (FFMs) for frictional studies. These instruments have also been used for studying scratch, wear, and indentation. These studies are valuable in the fundamental understanding of interfacial phenomena. In the second edition, I have added a new chapter, Chapter 11, on micro and nanoscale aspects of tribology and mechanics of magnetic storage components. This chapter presents the state of the art of the micro/nanotribology and micro/nanomechanics of magnetic storage components. In addition, typographical errors in Chapters 1 to 10 and the appendixes have been corrected. These additions update this book and make it more valuable to researchers of the subject. I am grateful to many colleagues and particularly to my students, whose work is reported in Chapter 11. I thank my wife, Sudha, who has been forbearing during the progress of the research reported in this chapter.

International Advanced Researches & Engineering Congress 2017 Proceeding

Book Dec 01 2020 INTERNATIONAL WORKSHOPS (at IAREC'17) (This book includes English (main) and Turkish languages) International Workshop on Mechanical Engineering International Workshop on Mechatronics Engineering International

Workshop on Energy Systems Engineering International Workshop on Automotive Engineering and Aerospace Engineering International Workshop on Material Engineering International Workshop on Manufacturing Engineering International Workshop on Physics Engineering International Workshop on Electrical and Electronics Engineering International Workshop on Computer Engineering and Software Engineering International Workshop on Chemical Engineering International Workshop on Textile Engineering International Workshop on Architecture International Workshop on Civil Engineering International Workshop on Geomatics Engineering International Workshop on Industrial Engineering International Workshop on Food Engineering International Workshop on Aquaculture Engineering International Workshop on Agriculture Engineering International Workshop on Mathematics Engineering International Workshop on Bioengineering Engineering International Workshop on Biomedical Engineering International Workshop on Genetic Engineering International Workshop on Environmental Engineering International Workshop on Other Engineering Science **Handbook of Performability Engineering** Jan 02 2021 Dependability and cost effectiveness are primarily seen as instruments for conducting international trade in the free market environment. These factors cannot be considered in isolation of each other. This

handbook considers all aspects of performability engineering. The book provides a holistic view of the entire life cycle of activities of the product, along with the associated cost of environmental preservation at each stage, while maximizing the performance.

Springer Handbook of Nanotechnology Feb 21 2020 This major work has established itself as the definitive reference in the nanoscience and nanotechnology area in one volume. It presents nanostructures, micro/nanofabrication, and micro/nanodevices. Special emphasis is on scanning probe microscopy, nanotribology and nanomechanics, molecularly thick films, industrial applications and microdevice reliability, and on social aspects. Reflecting further developments, the new edition has grown from six to eight parts. The latest information is added to fields such as bionanotechnology, nanorobotics, and NEMS/MEMS reliability. This classic reference book is orchestrated by a highly experienced editor and written by a team of distinguished experts for those learning about the field of nanotechnology.

Tribological Research and Design for Engineering Systems Feb 15 2022 These papers represent the proceedings from the 29th Leeds-Lyon Symposium on Tribology, 'Tribological Research and Design for Engineering Systems' which was held in September 2002. Over 130 delegates from 18 countries attended the symposium, and the

extensive discussions generated over 150 written questions and responses, which are documented at the end of this proceedings volume. There have been many advances in the field of tribology in recent years, with progress being made in the engineering and interaction of surfaces; micro and nano-tribology; elasto-hydrodynamics; surface films; surface texture; tribochemistry; wear and life prediction; with both experimental and theoretical contributions. These advances were reviewed, and the impact of this understanding on the fundamentals upon total engineering activity in design, manufacture and machine operation were considered. Readership: Scientists and researchers in the field of tribology.

Handbook of Micro/Nano Tribology Aug 09 2021 This second edition of Handbook of Micro/Nanotribology addresses the rapid evolution within this field, serving as a reference for the novice and the expert alike. Two parts divide this handbook: Part I covers basic studies, and Part II addresses design, construction, and applications to magnetic storage devices and MEMS. Discussions include: surface physics and methods for physically and chemically characterizing solid surfaces roughness characterization and static contact models using fractal analysis sliding at the interface and friction on an atomic scale scratching and wear as a result of sliding nanofabrication/nanomachining as well as nano/picoindentation lubricants for minimizing

friction and wear surface forces and microrheology of thin liquid films measurement of nanomechanical properties of surfaces and thin films atomic-scale simulations of interfacial phenomena micro/nanotribology and micro/nanomechanics of magnetic storage devices This comprehensive book contains 16 chapters contributed by more than 20 international researchers. In each chapter, the presentation starts with macroconcepts and then lead to microconcepts. With more than 500 illustrations and 50 tables, Handbook of Micro/Nanotribology covers the range of relevant topics, including characterization of solid surfaces, measurement techniques and applications, and theoretical modeling of interfaces. What's New in the Second Edition? New chapters on: AFM instrumentation Surface forces and adhesion Design and construction of magnetic storage devices Microdynamical devices and systems Mechanical properties of materials in microstructure Micro/nanotribology and micro/nanomechanics of MEMS devices Handbook of Nanomaterials Properties Feb 03 2021 Nanomaterials attract tremendous attention in recent researches. Although extensive research has been done in this field it still lacks a comprehensive reference work that presents data on properties of different Nanomaterials. This Handbook of Nanomaterials Properties will be the first single reference work that brings together the various properties with wide breadth and scope.

FUNDAMENTALS OF SOIL DYNAMICS AND EARTHQUAKE ENGINEERING Aug 21 2022

The majority of the cases of earthquake damage to buildings, bridges, and other retaining structures are influenced by soil and ground conditions. To address such phenomena, Soil Dynamics and Earthquake Engineering is the appropriate discipline. This textbook presents the fundamentals of Soil Dynamics, combined with the basic principles, theories and methods of Geotechnical Earthquake Engineering. It is designed for senior undergraduate and postgraduate students in Civil Engineering & Architecture. The text will also be useful to young faculty members, practising engineers and consultants. Besides, teachers will find it a useful reference for preparation of lectures and for designing short courses in Soil Dynamics and Geotechnical Earthquake Engineering. The book first presents the theory of vibrations and dynamics of elastic system as well as the fundamentals of engineering seismology. With this background, the readers are introduced to the characteristics of Strong Ground Motion, and Deterministic and Probabilistic seismic hazard analysis. The risk analysis and the reliability process of geotechnical engineering are presented in detail. An in-depth study of dynamic soil properties and the methods of their determination provide the basics to tackle the dynamic soil-structure interaction problems. Practical problems of dynamics of beam-foundation systems, dynamics of retaining walls, dynamic earth pressure theory,

wave propagation and liquefaction of soil are treated in detail with illustrative examples.

Advanced Soil Dynamics and Earthquake Engineering Sep 22 2022

The Summary of Engineering Research Jan 26 2023

Micro-Electronics and Telecommunication Engineering May 18 2022

The book presents high-quality papers from the Fourth International Conference on Microelectronics and Telecommunication Engineering (ICMETE 2021). It discusses the latest technological trends and advances in major research areas such as microelectronics, wireless communications, optical communication, signal processing, image processing, big data, cloud computing, artificial intelligence and sensor network applications. This book includes the contributions of national and international scientists, researchers, and engineers from both academia and the industry. The contents of this volume will be useful to researchers, professionals, and students alike.

30 Past SSC Junior Engineer General Awareness Solved Papers (Civil/ Electrical/ Mechanical) Jan 14 2022 30 Past Solved Papers (2018-07) for SSC junior engineer Exam General Awareness is a comprehensive book prepared using authentic papers of the SSC exam. The book contains General Awareness questions from 12 sets of 2018 Papers and 8 sets of 2017 Paper. The book also contains 10 more solved papers from 2016 to 2007 (2 sets of 2014 Paper). Each set has 50 mcqs with

detailed solutions provided at the end of each paper. The book would be useful for all the branches - Civil/ Mechanical/ Electrical. *SOUVENIR of 2nd International Science Congress (ISC-2012)* Mar 24 2020 The International Science Congress Association organized the 2nd International Science Congress (ISC-2012) with 'Science and Technology - Challenges of 21st Century' as its focal theme. ISC-2012 was divided in 20 sections. A total number of 800 Research Papers and 1200 registrations from 23 countries all over the world have been received. They was mainly from Bangladesh, Bulgariya, Cameroun, France, Greece, Iran, Iraq, Kazakhstan, Korea, Lithuania, Malaysia, Nigeria, Nepal, Phillipines, Pakistan, Poland, Romania, Slovakiya, USA, Ukraine, Venezuela, Turkey and India.

Scientific Computing in Electrical Engineering Mar 16 2022 This book is a collection of papers presented at the last Scientific Computing in Electrical Engineering (SCEE) Conference, held in Sicily, in 2004. The series of SCEE conferences aims at addressing mathematical problems which have a relevancy to industry. The areas covered at SCEE-2004 were: Electromagnetism, Circuit Simulation, Coupled Problems and General mathematical and computational methods.

Materials and Surface Engineering Mar 04 2021 This book, the second in the Woodhead Publishing Reviews: Mechanical Engineering Series, is a collection of high quality articles

(full research articles, review articles, and cases studies) with a special emphasis on research and development materials and surface engineering and its applications. Surface engineering techniques are being used in the automotive, aircraft, aerospace, missile, electronic, biomedical, textile, petrochemical, chemical, moulds and dies, machine tools, and construction industries. Materials science is an interdisciplinary field involving the micro and nano-structure, processing, properties of materials and its applications to various areas of engineering, technology and industry. This book addresses all types of materials, including metals and alloys, polymers, ceramics and glasses, composites, nano-materials, biomaterials, etc. The relationship between micro and nano-structure, processing, properties of materials is discussed. Surface engineering is a truly interdisciplinary topic in materials science that deals with the surface of solid matter. Written by a highly knowledgeable and well-respected experts in the field The diversity of the subjects of this book present a range of views based on international expertise

The Complete Book on Rubber Processing and Compounding Technology (with Machinery Details) 2nd Revised Edition Oct 11 2021 The production of rubber and rubber products is a large and diverse industry. The rubber product manufacturing industry is basically divided into two major sectors: tyre and non-tyre. The tyre sector produces all types of automotive and nonautomotive tyres whereas

the non-tyre sector produces high technology and sophisticated products like conveyor belts , rubber seals etc. The wide range of rubber products manufactured by the rubber industry comprises all types of heavy duty earth moving tyres, auto tyres, tubes, automobile parts, footwear, beltings etc. The rubber industry has been growing tremendously over the years. The future of the rubber industry is tied to the global economy. Rapidly growing automotive sector in developing economies and increased demand for high-performance tyres are expected to contribute to the growth of the global industrial rubber market. The current scenario reveals that there is a tremendous scope for the development of rubber processing industries. The global market for industrial rubber products is projected to increase 5.8 % per year. Investment in rubber industry is expected to offer significant opportunities in the near future and realizing returns to investors willing to explore this sector. This book deals with all aspects of rubber processing; mixing, milling, extrusion and molding, reclaiming and manufacturing process of rubber products. The major contents of the book are rubbers materials and processing, mixing technology of rubber, techniques of vulcanization, rubber vulcanization, rubber compounding, rubber reclaiming, manufacture of rubber products, latex and foam rubber, silicone rubber, polybutadiene and polyisoprene, styrene butadiene rubber, rubber natural etc. The book contains addresses of

plant & machinery suppliers with their Photographs. It will be a standard reference book for professionals, entrepreneurs, those studying and researching in this important area and others interested in the field of rubber processing technology. TAGS Basic compounding and processing of rubber, Best small and cottage scale industries, Business guidance for rubber processing, Business guidance for rubber compounding, Business guidance to clients, Business Plan for a Startup Business, Business plan on Rubber, Business start-up, How is rubber made?, How to Start a Rubber business?, How to Start a Rubber Production Business, How to start a successful Rubber Processing business, How to Start Rubber processing Business, How to Start Rubber Processing Industry in India, Manufacture of Rubber Products, Modern small and cottage scale industries, Most Profitable Rubber Processing Business Ideas, Natural Rubber Processing Line, Natural rubber processing method, Natural Rubber Processing, New small scale ideas in Rubber processing industry, Opportunities in Rubber industries for new business, Processing and Profiting from Rubber, Processing methods for rubber materials, Profitable Rubber Business Ideas Small Scale Manufacturing, Profitable small and cottage scale industries, Profitable Small Scale Rubber Manufacturing, Rubber and Rubber Products, Rubber based Industries processing, Rubber Based Small Scale Industries Projects, Rubber business plan,

Rubber Chemistry, Rubber compounding, Rubber Compounding & Mixing, Rubber compounding ingredients, Rubber compounding method, Rubber compounding process, Rubber compounding technology, Rubber Extrusion, Rubber Materials, Rubber mixing process, Rubber Mixing, Rubber Principles, Rubber processing, Rubber Processing & Rubber Based Profitable Projects, Rubber Processing and Profiting, Rubber Processing Business, Rubber Processing Industry in India, Rubber processing methods, Rubber Processing Projects, Rubber processing technology, Rubber Products manufacturing, Rubber Products, Rubber Reclaiming, Rubber technology, Rubber Technology and Manufacturing Process of Rubber Products, Rubber Vulcanization, Rubbers: materials and processing technology, Setting up of Rubber Processing Units, Small scale manufacturing business in rubber industry, Small Scale Rubber Processing Projects, Small scale Rubber production line, Small Start-up Business Project, Start up India, Stand up India, Starting a Rubber Processing Business, Startup, Start-up Business Plan for Rubber Processing, Startup ideas, Startup Project, Startup Project for Rubber processing and compounding, Startup project plan, Steps in processing of rubber, Vulcanization of rubber, Vulcanization of rubber compounds, Vulcanized rubber properties, Rubber processing and compounding

Indian Engineering and Industries Guide

Jun 26 2020

4th International Conference on Nanotechnologies and Biomedical Engineering

Oct 31 2020 This book gathers the proceedings of the 4th International Conference on Nanotechnologies and Biomedical Engineering, held on September 18-21, 2019, in Chisinau, Republic of Moldova. It continues the tradition of the previous conference proceedings, thus reporting on both fundamental and applied research at the interface between nanotechnologies and biomedical engineering. Topics include: developments in bio-micro/nanotechnologies and devices; biomedical signal processing; biomedical imaging; biomaterials for biomedical applications; biomimetics; bioinformatics and e-health, and advances in a number of related areas. The book offers a timely snapshot of cutting-edge, multidisciplinary research and developments in the field of biomedical and nano-engineering.

Introduction to Tribology May 06 2021 A fully updated version of the popular Introduction to Tribology, the second edition of this leading tribology text introduces the major developments in the understanding and interpretation of friction, wear and lubrication. Considerations of friction and wear have been fully revised to include recent analysis and data work, and friction mechanisms have been reappraised in light of current developments. In this edition, the breakthroughs in tribology at the nano- and micro- level as well as recent

developments in nanotechnology and magnetic storage technologies are introduced. A new chapter on the emerging field of green tribology and biomimetics is included. Introduces the topic of tribology from a mechanical engineering, mechanics and materials science points of view Newly updated chapter covers both the underlying theory and the current applications of tribology to industry Updated write-up on nanotribology and nanotechnology and introduction of a new chapter on green tribology and biomimetics

Applied Scanning Probe Methods III May 26 2020 The Nobel Prize of 1986 on Scanning Tunneling Microscopy signaled a new era in imaging. The scanning probes emerged as a new instrument for imaging with a precision sufficient to delineate single atoms. At first there were two - the Scanning Tunneling Microscope, or STM, and the Atomic Force Microscope, or AFM. The STM relies on electrons tunneling between tip and sample whereas the AFM depends on the force acting on the tip when it was placed near the sample. These were quickly followed by the magnetic Force Microscope, MFM, and the Electrostatic Force Microscope, EFM. The MFM will image a single magnetic bit with features as small as 10nm. With the EFM one can monitor the charge of a single electron. Prof. Paul Hansma at Santa Barbara opened the door even wider when he was able to image biological objects in aqueous environments. At this point the sluice gates were opened and a

multitude of different instruments appeared. There are significant differences between the Scanning Probe Microscopes or SPM, and others such as the Scanning Electron Microscope or SEM. The probe microscopes do not require preparation of the sample and they operate in ambient atmosphere, whereas, the SEM must operate in a vacuum environment and the sample must be cross-sectioned to expose the proper surface. However, the SEM can record 3D image and movies, features that are not available with the scanning probes.

Advances in Renewable Energy and Electric Vehicles Jan 22 2020 This book presents select proceedings of the International Conference on Advances in Renewable Energy and Electric Vehicles (AREEV 2020), and examines related emerging trends, feasible solutions to shape and enable the development of mankind. The topics covered include renewable energy sources, electric vehicles, energy storage systems, power system protection & security, smart grid and wide band-gap semiconductor technologies. The book also discusses applications of signal processing, artificial neural networks, optimal and robust control systems, and modeling and simulation of power electronic converters. The book will be a valuable reference for beginners, researchers, and professionals interested in power systems, renewable energy, and electric vehicles.

Applications of Computing, Automation and Wireless Systems in Electrical Engineering Jul 20 2022 This book discusses

key concepts, challenges and potential solutions in connection with established and emerging topics in advanced computing, renewable energy and network communications. Gathering edited papers presented at MARC 2018 on July 19, 2018, it will help researchers pursue and promote advanced research in the fields of electrical engineering, communication, computing and manufacturing.

Scanning Probe Microscopy Jun 19 2022 Scanning Probe Microscopy provides a comprehensive source of information for researchers, teachers, and graduate students about the rapidly expanding field of scanning probe theory. Written in the style of a textbook, it explains from scratch the theory behind today's simulation techniques and gives examples of theoretical concepts through state-of-the-art simulations, including the means to compare these results with experimental data. The book provides the first comprehensive framework for electron transport theory with its various degrees of approximations used in today's research, thus allowing extensive insight into the physics of scanning probes. Experimentalists will appreciate how the instrument's operation is changed by materials properties; theorists will understand how simulations can be directly compared to experimental data.

Bridging Circuits and Fields Sep 10 2021 Energy and power are fundamental concepts in electromagnetism and circuit theory, as well as

in optics, signal processing, power engineering, electrical machines, and power electronics. However, in crossing the disciplinary borders, we encounter understanding difficulties due to (1) the many possible mathematical representations of the same physical objects, and (2) the many possible physical interpretations of the same mathematical entities. The monograph proposes a quantum and a relativistic approach to electromagnetic power theory that is based on recent advances in physics and mathematics. The book takes a fresh look at old debates related to the significance of the Poynting theorem and the interpretation of reactive power. Reformulated in the mathematical language of geometric algebra, the new expression of electromagnetic power reflects the laws of conservation of energy-momentum in fields and circuits. The monograph offers a mathematically consistent and a physically coherent interpretation of the power concept and of the mechanism of power transmission at the subatomic (mesoscopic) level. The monograph proves (paraphrasing Heaviside) that there is no finality in the development of a vibrant discipline: power theory.

Orthogonal Functions in Systems and Control Apr 05 2021 This book provides a systematic and unified approach to the analysis, identification and optimal control of continuous-time dynamical systems via orthogonal polynomials such as Legendre, Laguerre, Hermite, Tchebycheff, Jacobi, Gegenbauer, and

via orthogonal functions such as sine-cosine, block-pulse, and Walsh. This is the first book devoted to the application of orthogonal polynomials in systems and control, establishing the superiority of orthogonal polynomials to other orthogonal functions.

Peterson's Graduate Programs in Engineering and Applied Sciences, 1996 Jul 08 2021 Graduate students depend on this series and ask for it by name. Why? For over 30 years, it's been the only one-stop source that supplies all of their information needs. The new editions of this six-volume set contain the most comprehensive information available on more than 1,500 colleges offering over 31,000 master's, doctoral, and professional-degree programs in more than 350 disciplines. New for 1997 -- Non-degree-granting research centers, institutes, and training programs that are part of a graduate degree program. Five discipline-specific volumes detail entrance and program requirements, deadlines, costs, contacts, and special options, such as distance learning, for each program, if available. Each Guide features "The Graduate Adviser", which discusses entrance exams, financial aid, accreditation, and more. Interest in these fields has never been higher! And this is the source to the 3,400 programs currently available -- from bioengineering and computer science to construction management.

Modern Tribology Handbook, Two Volume Set Jul 28 2020 Recent research has led to a deeper understanding of the nature and

consequences of interactions between materials on an atomic scale. The results have resonated throughout the field of tribology. For example, new applications require detailed understanding of the tribological process on macro- and microscales and new knowledge guides the rational

Peterson's Guide to Graduate Programs in Engineering and Applied Sciences Sep 29 2020 **Interdisciplinary Approaches to Information Systems and Software**

Engineering Nov 12 2021 It is now more important than ever to implement approaches and methods that can be effective in extracting meaningful information from large data sets. Although data sets may be available for different aspects of society, we may not assess the intrinsic characteristics of their behavior effectively. Additionally, frameworks are needed that can store, process, and represent the data in such a manner that can be of practical significance. *Interdisciplinary Approaches to Information Systems and Software Engineering* is an essential reference publication that assesses the significance of robust information systems in characterizing events of varying nature and dimensions. Additionally, the book includes studies on the development and application of decision-making and prediction modeling frameworks using different approaches such as agent-based modeling, spatial decision support systems, and spatial data mining. Covering topics such as management information systems, knowledge

discovery, and mathematical analysis, this book is ideal for professionals, researchers, and academicians in various disciplines including computer science, information technology, geographical information systems, remote sensing, and earth system sciences.

Department of Electrical and Computer Engineering Apr 17 2022

Electromagnetic Fields Mar 28 2023 The study of electromagnetic field theory is required for proper understanding of every device wherein electricity is used for operation. The proposed textbook on electromagnetic fields covers all the generic and unconventional topics including electrostatic boundary value problems involving two- and three-dimensional Laplacian fields and one- and two- dimensional Poissonion fields, magnetostatic boundary value problems, eddy currents, and electromagnetic compatibility. The subject matter is supported by practical applications, illustrations to supplement the theory, solved numerical problems, solutions manual and Powerpoint slides including appendices and mathematical relations. Aimed at undergraduate, senior undergraduate students of electrical and electronics engineering, it: Presents fundamental concepts of electromagnetic fields in a simplified manner Covers one two- and three-dimensional electrostatic boundary value problems involving Laplacian fields and Poissonion fields Includes exclusive chapters on eddy currents and electromagnetic compatibility Discusses important aspects of

magneto static boundary value problems
Explores all the basic vector algebra and vector calculus along with couple of two- and three-dimensional problems

Electromagnetic Pump and Hardware Development for Organs-on-chips

Oct 23 2022 MicroPhysiological Systems (MPS), also called organs-on-chips, attempt to mimic the relevant human multi-organ physiology in-vitro. They have potential applications in drug development and personalized medicine by enabling more accurate testing of physiological drug response earlier in the development cycle. On-platform pumps provide greater flexibility and design freedom and are a key feature of such platforms. One approach to multi-organ MPS platforms has been developed in our lab and uses an open-well system to culture tissues of various organs. A common fluid-media circulates between the organs using on-platform pneumatic diaphragm micro-pumps. These pumps require significant effort in setup and depend on external pressure and vacuum sources. An independent, portable pump with low power consumption is desirable. There are also on-going efforts in the field to make sterile platform components low-cost and single use, to reduce user setup time and sterilization effort. This thesis describes a scaled-up version of an ElectroMagnetic (EM) pump. The pump uses a teeter-totter EM actuator having a low energy consumption of about 1 mJ/stroke. The EM actuator minimizes energy by a latching design that requires a short pulse of energy

only to switch its state and its springs store energy which is recovered in the reverse stroke. This thesis also describes injection-molded, single-use platforms with onboard pneumatic diaphragm micro-pumps. It describes various valve and pump geometries and a model to predict large deflections of polymer diaphragms. We integrate the EM actuators with these platforms, demonstrating temperature rise of less than 0.1 °C, valve sealing up to 60 kPa, and a pumping frequency of 1 Hz, limited by diaphragm behavior. In addition, we improve platform features using spillways which allow for better passive leveling of fluid height between MPSes. This thesis also presents the selection of polymer tubing to resolve condensation issues in pneumatic channels of an MPS platform inside a cell culture incubator.
Electromagnetics for Electrical Machines Feb 27 2023 *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.

Applied Scanning Probe Methods IV Aug 29 2020

Applied Scanning Probe Methods II Apr 24 2020 The Nobel Prize of 1986 on Scanning Tunneling Microscopy signaled a new era in imaging. The scanning probes emerged as a new instrument for imaging with a precision sufficient to delineate single atoms. At first there were two - the Scanning Tunneling Microscope, or

STM, and the Atomic Force Microscope, or AFM. The STM relies on electrons tunneling between tip and sample whereas the AFM depends on the force acting on the tip when it was placed near the sample. These were quickly followed by the Magnetic Force Microscope, MFM, and the Electrostatic Force Microscope, EFM. The MFM will image a single magnetic bit with features as small as 10nm. With the EFM one can monitor the charge of a single electron. Prof. Paul Hansma at Santa Barbara opened the door even wider when he was able to image biological objects in aqueous environments. At this point the sluice gates were opened and a multitude of different instruments appeared. There are significant differences between the Scanning Probe Microscopes or SPM, and others such as the Scanning Electron Microscope or SEM. The probe microscopes do not require preparation of the sample and they operate in ambient atmosphere, whereas, the SEM must operate in a vacuum environment and the sample must be cross-sectioned to expose the proper surface. However, the SEM can record 3D image and movies, features that are not available with the scanning probes.

AI for Big Data-Based Engineering Applications from Security Perspectives Dec 13 2021
Artificial intelligence (AI), machine learning, and advanced electronic circuits involve learning from every data input and using those inputs to generate new rules for future business analytics. AI and machine learning are now giving us new opportunities to use big data that we already had, as well as unleash a whole lot of new use cases with new data types. With the increasing use of AI dealing with highly sensitive information such as healthcare, adequate security measures are required to securely store and transmit this information. This book provides a broader coverage of the basic aspects of advanced circuits design and applications. *AI for Big Data-Based Engineering Applications from Security Perspectives* is an integrated source that aims at understanding the basic concepts associated with the security of advanced circuits. The content includes theoretical frameworks and recent empirical findings in the field to understand the associated principles, key challenges, and recent real-time applications of advanced circuits, AI, and big data security. It illustrates the notions, models, and terminologies that are widely used in the area of Very Large Scale

Integration (VLSI) circuits, security, identifies the existing security issues in the field, and evaluates the underlying factors that influence system security. This work emphasizes the idea of understanding the motivation behind advanced circuit design to establish the AI interface and to mitigate security attacks in a better way for big data. This book also outlines exciting areas of future research where already existing methodologies can be implemented. This material is suitable for students, researchers, and professionals with research interest in AI for big data-based engineering applications, faculty members across universities, and software developers.
Novel Materials Processing by Advanced Electromagnetic Energy Sources Nov 24 2022
Proceedings of the International Symposium in Novel Materials Processing by Advanced Electromagnetic Energy Sources (MAPEES'04) *Identifies and details recent progress achieved by advanced electromagnetic energy sources in materials processing. *Explores novel approaches to advanced electromagnetic energy processing of materials in an attempt to discover new and unique industrial fields.