

Matlab Tutorial For Engineering Electromagnetics And Beyond

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Engineering
Electromagnetics - Nathan
Ida 2015-03-20
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

Berechnung der elastischen Eigenschaften von Baugruppen im Pressenbau - Herbert Blum 1980

Power System Analysis - Hadi Saadat 2009-04-01

This is an introduction to power system analysis and design. The text contains fundamental concepts and modern topics with applications to real-world problems, and integrates MATLAB and SIMULINK throughout.

Digital Signal Processing Using MATLAB for Students

and Researchers - John W. Leis 2011-10-14
Quickly Engages in Applying Algorithmic Techniques to Solve Practical Signal Processing Problems With its active, hands-on learning approach, this text enables readers to master the underlying principles of digital signal processing and its many applications in industries such as digital television, mobile and broadband communications, and medical/scientific devices. Carefully developed MATLAB® examples throughout the text illustrate the mathematical concepts and use of digital signal processing algorithms. Readers will develop a deeper understanding of how to apply the algorithms by manipulating the codes in the examples to see their effect. Moreover, plenty of exercises help to put knowledge into practice solving real-world signal processing challenges. Following an introductory

chapter, the text explores: Sampled signals and digital processing Random signals Representing signals and systems Temporal and spatial signal processing Frequency analysis of signals Discrete-time filters and recursive filters Each chapter begins with chapter objectives and an introduction. A summary at the end of each chapter ensures that one has mastered all the key concepts and techniques before progressing in the text. Lastly, appendices listing selected web resources, research papers, and related textbooks enable the investigation of individual topics in greater depth. Upon completion of this text, readers will understand how to apply key algorithmic techniques to address practical signal processing problems as well as develop their own signal processing algorithms. Moreover, the text provides a solid foundation for evaluating and applying new

digital processing signal techniques as they are developed.

MATLAB-based Electromagnetics -

Branislav M. Notaros 2014
This title can be used to either complement another electromagnetics text, or as an independent resource. Designed primarily for undergraduate electromagnetics, it can also be used in follow-up courses on antennas, propagation, microwaves, advanced electromagnetic theory, computational electromagnetics, electrical machines, signal integrity, etc. This title also provides practical content to current and aspiring industry professionals. MATLAB-Based Electromagnetics provides engineering and physics students and other users with an operational knowledge and firm grasp of electromagnetic fundamentals aimed toward practical engineering applications, by teaching them "hands on"

electromagnetics through a unique and comprehensive collection of MATLAB computer exercises and projects. Essentially, the book unifies two themes: it presents and explains electromagnetics using MATLAB on one side, and develops and discusses MATLAB for electromagnetics on the other. MATLAB codes described (and listed) in TUTORIALS or proposed in other exercises provide prolonged benefits of learning. By running codes; generating results, figures, and diagrams; playing movies and animations; and solving a large variety of problems in MATLAB, in class, with peers in study groups, or individually, readers gain a deep understanding of electromagnetics. Basics of MATLAB and Beyond - Andrew Knight 2019-05-07
MATLAB The tremendously popular computation, numerical analysis, signal

processing, data analysis, and graphical software package-allows virtually every scientist and engineer to make better and faster progress. As MATLAB's world-wide sales approach a half-million with an estimated four million users, it becomes a near necessity that professionals a

Electromagnetic Engineering and Waves - Aziz S. Inan

2014-08-20

"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"
Ultra Wideband Signals and Systems in Communication Engineering - M. Ghavami
2004-07-23

Ultra Wideband (UWB) is the hot new topic in wireless communication engineering today. High-speed communication over short distances using sub-nanosecond pulses, rather than conventional sinusoidal waves, has paved the way for cheap wireless transceivers, capturing the imagination of both academics and engineers in industry alike. *Ultra Wideband Signals and Systems in Communication Engineering* focuses on the basic signal processing that underlies current and future ultra wideband systems ensuring this text will be essential reading even as UWB applications mature and change or regulations regarding ultra wideband

systems are modified. Provides everything you need to know about Ultra Wideband Communications in one compact volume Explains, in an easy to understand manner, the basics of UWB and its applications Covers, in detail, the generation of UWB waveforms through to the position and location of UWB signals Discusses the issues that must be solved for UWB devices to explode onto the consumer communication market Includes examples and problems in each chapter to aid understanding Features a companion website including Solutions manual, Matlab programs, Electronic versions of the figures and a sample chapter This enlightening text is a must for senior undergraduates and postgraduate students interested in studying UWB, and the emphasis on UWB development for commercial consumer communications products means that any communication engineer or

manager cannot afford to be without it!

Electromagnetic Fields and Waves - Magdy F. Iskander 2000

Electromagnetics - Branislav M. Notaros 2011
"Electromagnetics" is a thorough text that enables readers to readily grasp EM fundamentals, develop true problem-solving skills, and really understand and like the material. It is meant as an "ultimate resource" for undergraduate electromagnetics."

Engineering Optics with MATLAB - Ting-Chung Poon 2017-10-10

This invaluable second edition provides more in-depth discussions and examples in various chapters. Based largely on the authors' own in-class lectures as well as research in the area, the comprehensive textbook serves two purposes. The first introduces some traditional topics such as matrix formalism of

geometrical optics, wave propagation and diffraction, and some fundamental background on Fourier optics. The second presents the essentials of acousto-optics and electro-optics, and provides the students with experience in modeling the theory and applications using a commonly used software tool MATLAB®. Request Inspection Copy

The Method of Moments in Electromagnetics - Walton C. Gibson
2021-09-06

The Method of Moments in Electromagnetics, Third Edition details the numerical solution of electromagnetic integral equations via the Method of Moments (MoM). Previous editions focused on the solution of radiation and scattering problems involving conducting, dielectric, and composite objects. This new edition adds a significant amount of material on new, state-of-the-art compressive techniques. Included are new chapters on the

Adaptive Cross Approximation (ACA) and Multi-Level Adaptive Cross Approximation (MLACA), advanced algorithms that permit a direct solution of the MoM linear system via LU decomposition in compressed form. Significant attention is paid to parallel software implementation of these methods on traditional central processing units (CPUs) as well as new, high performance graphics processing units (GPUs). Existing material on the Fast Multipole Method (FMM) and Multi-Level Fast Multipole Algorithm (MLFMA) is also updated, blending in elements of the ACA algorithm to further reduce their memory demands. The Method of Moments in Electromagnetics is intended for students, researchers, and industry experts working in the area of computational electromagnetics (CEM) and the MoM. Providing a bridge between theory and

software implementation, the book incorporates significant background material, while presenting practical, nuts-and-bolts implementation details. It first derives a generalized set of surface integral equations used to treat electromagnetic radiation and scattering problems, for objects comprising conducting and dielectric regions. Subsequent chapters apply these integral equations for progressively more difficult problems such as thin wires, bodies of revolution, and two- and three-dimensional bodies. Radiation and scattering problems of many different types are considered, with numerical results compared against analytical theory as well as measurements.

Advanced Engineering Electromagnetics -
Constantine A. Balanis
2012-01-24
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.

Fundamentals of Electromagnetics with MATLAB - Karl Erik

Lonngren 2007

Accompanying CD-ROM contains a MATLAB tutorial.

Introduction to the Finite Element Method in

Electromagnetics - Anastasis

C. Polycarpou 2006-12-01

This series lecture is an introduction to the finite element method with applications in electromagnetics. The finite element method is a numerical method that is used to solve boundary-value problems characterized by a partial differential equation and a set of boundary conditions. The geometrical domain of a boundary-value problem is discretized using sub-domain elements, called the finite elements, and the

differential equation is applied to a single element after it is brought to a “weak” integro-differential form. A set of shape functions is used to represent the primary unknown variable in the element domain. A set of linear equations is obtained for each element in the discretized domain. A global matrix system is formed after the assembly of all elements. This lecture is divided into two chapters. Chapter 1 describes one-dimensional boundary-value problems with applications to electrostatic problems described by the Poisson's equation. The accuracy of the finite element method is evaluated for linear and higher order elements by computing the numerical error based on two different definitions. Chapter 2 describes two-dimensional boundary-value problems in the areas of electrostatics and electrodynamics (time-harmonic problems). For the second category, an

absorbing boundary condition was imposed at the exterior boundary to simulate undisturbed wave propagation toward infinity. Computations of the numerical error were performed in order to evaluate the accuracy and effectiveness of the method in solving electromagnetic problems. Both chapters are accompanied by a number of Matlab codes which can be used by the reader to solve one- and two-dimensional boundary-value problems. These codes can be downloaded from the publisher's URL: www.morganclaypool.com/page/polycarpou This lecture is written primarily for the nonexpert engineer or the undergraduate or graduate student who wants to learn, for the first time, the finite element method with applications to electromagnetics. It is also targeted for research engineers who have knowledge of other numerical techniques and

want to familiarize themselves with the finite element method. The lecture begins with the basics of the method, including formulating a boundary-value problem using a weighted-residual method and the Galerkin approach, and continues with imposing all three types of boundary conditions including absorbing boundary conditions.

Another important topic of emphasis is the development of shape functions including those of higher order. In simple words, this series lecture provides the reader with all information necessary for someone to apply successfully the finite element method to one- and two-dimensional boundary-value problems in electromagnetics. It is suitable for newcomers in the field of finite elements in electromagnetics.

Numerical Methods for Chemical Engineering - Kenneth J Beers 2007

Applications of numerical mathematics and scientific computing to chemical engineering.

Introduction to Applied Linear Algebra - Stephen Boyd 2018-06-07

A groundbreaking introduction to vectors, matrices, and least squares for engineering applications, offering a wealth of practical examples.

Signals and Systems Using MATLAB - Luis

Chaparro 2018-11-01

Signals and Systems Using MATLAB, Third Edition, features a pedagogically rich and accessible approach to what can commonly be a mathematically dry subject.

Historical notes and common mistakes combined with applications in controls, communications and signal processing help students understand and appreciate the usefulness of the techniques described in the text. This new edition features more end-of-chapter problems, new

content on two-dimensional signal processing, and discussions on the state-of-the-art in signal processing.

Conceptual

Electromagnetics -

Branislav M. Notaroš

2017-07-06

This is a textbook on electromagnetic fields and waves completely based on conceptual understanding of electromagnetics. The text provides operational knowledge and firm grasp of electromagnetic fundamentals aimed toward practical engineering applications by combining fundamental theory and a unique and comprehensive collection of as many as 888 conceptual questions and problems in electromagnetics.

Conceptual questions are designed to strongly enforce and enhance both the theoretical concepts and understanding and problem-solving techniques and skills in electromagnetics.

Understanding LTE with MATLAB - Houman

Zarrinkoub 2014-01-28

An introduction to technical details related to the Physical Layer of the LTE standard with MATLAB®. The LTE (Long Term Evolution) and LTE-Advanced are among the latest mobile communications standards, designed to realize the dream of a truly global, fast, all-IP-based, secure broadband mobile access technology. This book examines the Physical Layer (PHY) of the LTE standards by incorporating three conceptual elements: an overview of the theory behind key enabling technologies; a concise discussion regarding standard specifications; and the MATLAB® algorithms needed to simulate the standard. The use of MATLAB®, a widely used technical computing language, is one of the distinguishing features of this book. Through a series of MATLAB® programs, the author explores each of the

enabling technologies, pedagogically synthesizes an LTE PHY system model, and evaluates system performance at each stage. Following this step-by-step process, readers will achieve deeper understanding of LTE concepts and specifications through simulations. Key Features:

- Accessible, intuitive, and progressive; one of the few books to focus primarily on the modeling, simulation, and implementation of the LTE PHY standard
- Includes case studies and test benches in MATLAB®, which build knowledge gradually and incrementally until a functional specification for the LTE PHY is attained
- Accompanying Web site includes all MATLAB® programs, together with PowerPoint slides and other illustrative examples

Dr Houman Zarrinkoub has served as a development manager and now as a senior product manager with

MathWorks, based in Massachusetts, USA. Within his 12 years at MathWorks, he has been responsible for multiple signal processing and communications software tools. Prior to MathWorks, he was a research scientist in the Wireless Group at Nortel Networks, where he contributed to multiple standardization projects for 3G mobile technologies. He has been awarded multiple patents on topics related to computer simulations. He holds a BSc degree in Electrical Engineering from McGill University and MSc and PhD degrees in Telecommunications from the Institut Nationale de la Recherche Scientifique, in Canada.

<http://www.wiley.com/go/zarrinkoub>
www.wiley.com/go/zarrinkoub/a

Partial Differential Equations - Walter A. Strauss 2007-12-21
 Partial Differential Equations presents a balanced and

comprehensive introduction to the concepts and techniques required to solve problems containing unknown functions of multiple variables. While focusing on the three most classical partial differential equations (PDEs)—the wave, heat, and Laplace equations—this detailed text also presents a broad practical perspective that merges mathematical concepts with real-world application in diverse areas including molecular structure, photon and electron interactions, radiation of electromagnetic waves, vibrations of a solid, and many more. Rigorous pedagogical tools aid in student comprehension; advanced topics are introduced frequently, with minimal technical jargon, and a wealth of exercises reinforce vital skills and invite additional self-study. Topics are presented in a logical progression, with major concepts such as wave propagation, heat and

diffusion, electrostatics, and quantum mechanics placed in contexts familiar to students of various fields in science and engineering. By understanding the properties and applications of PDEs, students will be equipped to better analyze and interpret central processes of the natural world.

Introduction to Microwave Imaging - Natalia K. Nikolova
2017-07-13

A one-stop tutorial for beginners covering the fundamentals of microwave imaging, including application examples and practical exercises.

Teaching Engineering, Second Edition - Phillip C. Wankat
2015-01-15

The majority of professors have never had a formal course in education, and the most common method for learning how to teach is on-the-job training. This represents a challenge for disciplines with ever more complex subject matter, and a lost opportunity when new

active learning approaches to education are yielding dramatic improvements in student learning and retention. This book aims to cover all aspects of teaching engineering and other technical subjects. It presents both practical matters and educational theories in a format useful for both new and experienced teachers. It is organized to start with specific, practical teaching applications and then leads to psychological and educational theories. The "practical orientation" section explains how to develop objectives and then use them to enhance student learning, and the "theoretical orientation" section discusses the theoretical basis for learning/teaching and its impact on students. Written mainly for PhD students and professors in all areas of engineering, the book may be used as a text for graduate-level classes and professional workshops or

by professionals who wish to read it on their own.

Although the focus is engineering education, most of this book will be useful to teachers in other disciplines. Teaching is a complex human activity, so it is impossible to develop a formula that guarantees it will be excellent. However, the methods in this book will help all professors become good teachers while spending less time preparing for the classroom. This is a new edition of the well-received volume published by McGraw-Hill in 1993. It includes an entirely revised section on the Accreditation Board for Engineering and Technology (ABET) and new sections on the characteristics of great teachers, different active learning methods, the application of technology in the classroom (from clickers to intelligent tutorial systems), and how people learn.

Fundamentals of Wireless Communication - David Tse

2005-05-26

This textbook takes a unified view of the fundamentals of wireless communication and explains cutting-edge concepts in a simple and intuitive way. An abundant supply of exercises make it ideal for graduate courses in electrical and computer engineering and it will also be of great interest to practising engineers.

Matlab for Engineers - Holly Moore 2011-07-28

This is a value pack of MATLAB for Engineers: International Version and MATLAB & Simulink Student Version 2011a

Dynamical Systems with Applications using

MATLAB® - Stephen Lynch 2014-07-22

This textbook, now in its second edition, provides a broad introduction to both continuous and discrete dynamical systems, the theory of which is motivated by examples from a wide range of disciplines. It emphasizes applications and simulation utilizing

MATLAB®, Simulink®, the Image Processing Toolbox® and the Symbolic Math toolbox®, including MuPAD. Features new to the second edition include · sections on series solutions of ordinary differential equations, perturbation methods, normal forms, Gröbner bases, and chaos synchronization; · chapters on image processing and binary oscillator computing; · hundreds of new illustrations, examples, and exercises with solutions; and · over eighty up-to-date MATLAB program files and Simulink model files available online. These files were voted MATLAB Central Pick of the Week in July 2013. The hands-on approach of Dynamical Systems with Applications using MATLAB, Second Edition, has minimal prerequisites, only requiring familiarity with ordinary differential equations. It will appeal to advanced undergraduate and graduate students, applied

mathematicians, engineers, and researchers in a broad range of disciplines such as population dynamics, biology, chemistry, computing, economics, nonlinear optics, neural networks, and physics. Praise for the first edition Summing up, it can be said that this text allows the reader to have an easy and quick start to the huge field of dynamical systems theory. MATLAB/SIMULINK facilitate this approach under the aspect of learning by doing. —OR News/Operations Research Spectrum The MATLAB programs are kept as simple as possible and the author's experience has shown that this method of teaching using MATLAB works well with computer laboratory classes of small sizes.... I recommend 'Dynamical Systems with Applications using MATLAB' as a good handbook for a diverse readership: graduates and professionals in mathematics, physics,

science and engineering. —Mathematica *A Primer on Scientific Programming with Python* - Hans Petter Langtangen 2016-07-28 The book serves as a first introduction to computer programming of scientific applications, using the high-level Python language. The exposition is example and problem-oriented, where the applications are taken from mathematics, numerical calculus, statistics, physics, biology and finance. The book teaches "Matlab-style" and procedural programming as well as object-oriented programming. High school mathematics is a required background and it is advantageous to study classical and numerical one-variable calculus in parallel with reading this book. Besides learning how to program computers, the reader will also learn how to solve mathematical problems, arising in various branches of science and

engineering, with the aid of numerical methods and programming. By blending programming, mathematics and scientific applications, the book lays a solid foundation for practicing computational science. From the reviews: Langtangen ... does an excellent job of introducing programming as a set of skills in problem solving. He guides the reader into thinking properly about producing program logic and data structures for modeling real-world problems using objects and functions and embracing the object-oriented paradigm. ... Summing Up: Highly recommended. F. H. Wild III, Choice, Vol. 47 (8), April 2010 Those of us who have learned scientific programming in Python 'on the streets' could be a little jealous of students who have the opportunity to take a course out of Langtangen's Primer." John D. Cook, The Mathematical Association of America, September 2011 This book

goes through Python in particular, and programming in general, via tasks that scientists will likely perform. It contains valuable information for students new to scientific computing and would be the perfect bridge between an introduction to programming and an advanced course on numerical methods or computational science. Alex Small, IEEE, CiSE Vol. 14 (2), March /April 2012 "This fourth edition is a wonderful, inclusive textbook that covers pretty much everything one needs to know to go from zero to fairly sophisticated scientific programming in Python..." Joan Horvath, Computing Reviews, March 2015 *Index of Conference Proceedings* - British Library. Document Supply Centre 2000

Applications of MATLAB in Science and Engineering - Tadeusz Michalowski 2011-09-09

The book consists of 24

chapters illustrating a wide range of areas where MATLAB tools are applied. These areas include mathematics, physics, chemistry and chemical engineering, mechanical engineering, biological engineering (molecular biology) and medical sciences, communication and control systems, digital signal, image and video processing, system modeling and simulation. Many interesting problems have been included throughout the book, and its contents will be beneficial for students and professionals in wide areas of interest.

MATLAB Simulations for Radar Systems Design -

Bassem R. Mahafza
2003-12-17

Simulation is integral to the successful design of modern radar systems, and there is arguably no better software for this purpose than MATLAB. But software and the ability to use it does not guarantee success. One must also: Understand radar

operations and design philosophy Know how to select the radar parameters to meet the design req

Software-Defined Radio for Engineers -

Alexander M. Wyglinski 2018-04-30

Based on the popular Artech House classic, Digital Communication Systems Engineering with Software-Defined Radio, this book provides a practical approach to quickly learning the software-defined radio (SDR) concepts needed for work in the field. This up-to-date volume guides readers on how to quickly prototype wireless designs using SDR for real-world testing and experimentation. This book explores advanced wireless communication techniques such as OFDM, LTE, WLA, and hardware targeting. Readers will gain an understanding of the core concepts behind wireless hardware, such as the radio frequency front-end, analog-to-digital and digital-to-analog converters, as well as various processing

technologies. Moreover, this volume includes chapters on timing estimation, matched filtering, frame synchronization message decoding, and source coding. The orthogonal frequency division multiplexing is explained and details about HDL code generation and deployment are provided. The book concludes with coverage of the WLAN toolbox with OFDM beacon reception and the LTE toolbox with downlink reception. Multiple case studies are provided throughout the book. Both MATLAB and Simulink source code are included to assist readers with their projects in the field.

Practical Image and Video Processing Using MATLAB

- Oge Marques

2011-08-04

UP-TO-DATE, TECHNICALLY ACCURATE COVERAGE OF ESSENTIAL TOPICS IN IMAGE AND VIDEO PROCESSING

This is the first book to combine image and video processing with a practical

MATLAB®-oriented approach in order to demonstrate the most important image and video techniques and algorithms. Utilizing minimal math, the contents are presented in a clear, objective manner, emphasizing and encouraging experimentation. The book has been organized into two parts. Part I: Image Processing begins with an overview of the field, then introduces the fundamental concepts, notation, and terminology associated with image representation and basic image processing operations. Next, it discusses MATLAB® and its Image Processing Toolbox with the start of a series of chapters with hands-on activities and step-by-step tutorials. These chapters cover image acquisition and digitization; arithmetic, logic, and geometric operations; point-based, histogram-based, and neighborhood-based image enhancement techniques;

the Fourier Transform and relevant frequency-domain image filtering techniques; image restoration; mathematical morphology; edge detection techniques; image segmentation; image compression and coding; and feature extraction and representation. Part II: Video Processing presents the main concepts and terminology associated with analog video signals and systems, as well as digital video formats and standards. It then describes the technically involved problem of standards conversion, discusses motion estimation and compensation techniques, shows how video sequences can be filtered, and concludes with an example of a solution to object detection and tracking in video sequences using MATLAB®. Extra features of this book include: More than 30 MATLAB® tutorials, which consist of step-by-step guides to exploring image and video processing

techniques using MATLAB® Chapters supported by figures, examples, illustrative problems, and exercises Useful websites and an extensive list of bibliographical references This accessible text is ideal for upper-level undergraduate and graduate students in digital image and video processing courses, as well as for engineers, researchers, software developers, practitioners, and anyone who wishes to learn about these increasingly popular topics on their own.

Electric Machines - Jimmie J. Cathey 2001

This text contains sufficient material for a single semester core course in electric machines and energy conversion, while allowing some selectivity among the topics covered by the latter sections of Chapters 3-7 depending on a school's curriculum. The text can work for either a course in energy design principles and analysis with

an optional design project, or for a capstone design course that follows an introductory course in energy device principles. A unique feature of "Electric Machines: Analysis and Design Applying MATLAB" is its integration of the popular interactive computer software MATLAB to handle the tedious calculations arising in electric machine analysis. As a result, more exact models of devices can be retained for analysis rather than the approximate models commonly introduced for the sake of computational simplicity.

Heat Transfer - Gregory Nellis 2009

This textbook provides engineers with the capability, tools and confidence to solve real-world heat transfer problems.

Lectures on Modern Convex Optimization - Aharon Ben-Tal 2001-01-01

Here is a book devoted to well-structured and thus efficiently solvable convex

optimization problems, with emphasis on conic quadratic and semidefinite programming. The authors present the basic theory underlying these problems as well as their numerous applications in engineering, including synthesis of filters, Lyapunov stability analysis, and structural design. The authors also discuss the complexity issues and provide an overview of the basic theory of state-of-the-art polynomial time interior point methods for linear, conic quadratic, and semidefinite programming. The book's focus on well-structured convex problems in conic form allows for unified theoretical and algorithmical treatment of a wide spectrum of important optimization problems arising in applications.

The Engineering Index Annual - 1993

Since its creation in 1884, Engineering Index has covered virtually every major engineering innovation from around the

world. It serves as the historical record of virtually every major engineering innovation of the 20th century. Recent content is a vital resource for current awareness, new production information, technological forecasting and competitive intelligence. The world's most comprehensive interdisciplinary engineering database, Engineering Index contains over 10.7 million records. Each year, over 500,000 new abstracts are added from over 5,000 scholarly journals, trade magazines, and conference proceedings. Coverage spans over 175 engineering disciplines from over 80 countries. Updated weekly.

Essential Mechanics - Statics and Strength of Materials with MATLAB and Octave - P. Venkataraman 2020-01-07

Essential Mechanics - Statics and Strength of Materials with MATLAB and Octave combines two core engineering science courses - "Statics" and "Strength of Materials" - in mechanical,

civil, and aerospace engineering. It weaves together various essential topics from Statics and Strength of Materials to allow discussing structural design from the very beginning. The traditional content of these courses are reordered to make it convenient to cover rigid body equilibrium and extend it to deformable body mechanics. The e-book covers the most useful topics from both courses with computational support through MATLAB/Octave. The traditional approach for engineering content is emphasized and is rigorously supported through graphics and analysis. Prior knowledge of MATLAB is not necessary. Instructions for its use in context is provided and explained. It takes advantage of the numerical, symbolic, and graphical capability of MATLAB for effective problem solving. This computational ability provides a natural procedure

for What if? exploration that is important for design. The book also emphasizes graphics to understand, learn, and explore design. The idea for this book, the organization, and the flow of content is original and new. The integration of computation, and the marriage of analytical and computational skills is a new valuable experience provided by this e-book. Most importantly the book is very interactive with respect to the code as it appears along with the analysis.

Electromagnetics and Antenna Technology -

Alan J. Fenn 2017-12-31
Written by a leading expert in the field, this practical new resource presents the fundamentals of electromagnetics and antenna technology. This book covers the design, electromagnetic simulation, fabrication, and measurements for various types of antennas, including impedance matching techniques and

beamforming for ultrawideband dipoles, monopoles, loops, vector sensors for direction finding, HF curtain arrays, 3D printed nonplanar patch antenna arrays, waveguides for portable radar, reflector antennas, and other antennas. It explores the essentials of phased array antennas and includes detailed derivations of important field equations, and a detailed formulation of the method of moments. This resource exhibits essential derivations of equations, providing readers with a strong foundation of the underpinnings of electromagnetics and antennas. It includes a complete chapter on the details of antenna and electromagnetic test and measurement. This book explores details on 3D printed non-planar circular patch array antenna technology and the design and analysis of a planar array-fed axisymmetric gregorian reflector. The

lumped-element impedance matched antennas are examined and include a look at an analytic impedance matching solution with a parallel LC network. This book provides key insight into many aspects of antenna technology that have broad applications in radar and communications.

Applied Electromagnetics -

Stuart M. Wentworth

2007-01-09

STUDENT COMPANION SITE

Every new copy of Stuart Wentworth's Applied Electromagnetics comes with a registration code which allows access to the Student's Book Companion Site. On the BCS the student will find: * Detailed Solutions to Odd-Numbered Problems in the text * Detailed Solutions to all Drill Problems from the text * MATLAB code for all the MATLAB examples in the text * Additional MATLAB demonstrations with code. This includes a Transmission Lines simulator created by the author. * Weblinks to a

vast array of resources for the engineering student. Go to www.wiley.com/college/wentworth to link to Applied Electromagnetics and the Student Companion Site. ABOUT THE PHOTO Passive RFID systems, consisting of readers and tags, are expected to replace bar codes as the primary means of identification, inventory and billing of everyday items. The tags typically consist of an RFID chip placed on a flexible film containing a planar antenna. The antenna captures radiation from the reader's signal to power the tag electronics, which then responds to the reader's query. The PENI Tag (Product Emitting Numbering Identification Tag) shown, developed by the University of Pittsburgh in a team led by Professor Marlin H. Mickle, integrates the antenna with the rest of the tag electronics. RFID systems involve many electromagnetics concepts,

including antennas, radiation, transmission lines, and microwave circuit components. (Photo courtesy of Marlin H. Mickle.)

Dynamical Systems with Applications Using Mathematica® - Stephen Lynch 2017-10-12

This book provides an introduction to the theory of dynamical systems with the aid of the Mathematica® computer algebra package. The book has a very hands-on approach and takes the reader from basic theory to

recently published research material. Emphasized throughout are numerous applications to biology, chemical kinetics, economics, electronics, epidemiology, nonlinear optics, mechanics, population dynamics, and neural networks. Theorems and proofs are kept to a minimum. The first section deals with continuous systems using ordinary differential equations, while the second part is devoted to the study of discrete dynamical systems.