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KEY=OF - MAURICE DICKSON

Physical Principles of Wireless Communications - Solutions Manual Propagation Engineering in Wireless Communications Springer This book covers the basic principles for understanding radio wave propagation for common frequency bands used in radio-communications. This includes achievements and developments in propagation models for wireless communication. This book is intended to bridge the gap between the theoretical calculations and approaches to the applied procedures needed for radio links design in a proper manner. The authors emphasize propagation engineering by giving fundamental information and explain the use of basic principles together with technical achievements. This new edition includes additional information on radio wave propagation in guided media and technical issues for fiber optics cable networks with several examples and problems. This book also includes a solution manual - with 90 solved examples distributed throughout the chapters - and 158 problems including practical values and assumptions. **Physical Principles of Wireless Communications** CRC Press Wireless communications are based on the launching, propagation, and detection of electromagnetic waves emitted primarily at radio or microwave frequencies. Their history can be traced back to the mid-19th century when James Clerk Maxwell formulated the basic laws of electromagnetism and Heinrich Hertz demonstrated the propagation of radio waves across his laboratory. Recent engineering breakthroughs have led to wireless communication systems that have not only revolutionized modern lifestyles, but have also launched new industries. Based on the author's course in the physics of wireless communications, **Physical Principles of Wireless Communications** provides students with a solid foundation in modern wireless communication systems. It offers rigorous analyses of the devices and physical mechanisms that constitute the physical layers of these systems. Starting with a review of Maxwell's equations, the textbook details the operation of antennas and antenna arrays, teaching students how to perform the necessary design calculations. It also explores the propagation of electromagnetic waves, leading to important descriptions of mean path loss. The text also reviews the principles of probability theory, enabling students to calculate the margins that must be allowed to account for statistical variation in path loss. In addition, it covers the physics of Geostationary Earth Orbiting (GEO) satellites and Low Earth Orbiting (LEO) satellites so students may evaluate and make first-order designs of satellite communications (SATCOM) systems. **Physical Principles of Wireless Communications, Second Edition** CRC Press Updated and expanded, **Physical Principles of Wireless Communications, Second Edition** illustrates the relationship between scientific discoveries and their application to the invention and engineering of wireless communication systems. The second edition of this popular textbook starts with a review of the relevant physical laws, including Planck's Law of Blackbody Radiation, Maxwell's equations, and the laws of Special and General Relativity. It describes sources of electromagnetic noise, operation of antennas and antenna arrays, propagation losses, and satellite operation in sufficient detail to allow students to perform their own system designs and engineering calculations. Illustrating the operation of the physical layer of wireless communication systems—including cell phones, communication satellites, and wireless local area networks—the text covers the basic equations of electromagnetism, the principles of probability theory, and the operation of antennas. It explores the propagation of electromagnetic waves and describes the losses and interference effects that waves encounter as they propagate through cities, inside buildings, and to and from satellites orbiting the earth. Important natural phenomena are also described, including Cosmic Microwave Background Radiation, ionospheric reflection, and tropospheric refraction. New in the Second Edition: Descriptions of 3G and 4G cell phone systems Discussions on the relation between the basic laws of quantum and relativistic physics and the engineering of modern wireless communication systems A new section on Planck's Law of Blackbody Radiation Expanded discussions on general relativity and special relativity and their relevance to GPS system design An expanded chapter on antennas that includes wire loop antennas Expanded discussion of shadowing correlations and their effect on cell phone system design The text covers the physics of Geostationary Earth Orbiting satellites, Medium Earth Orbiting satellites, and Low Earth Orbiting satellites enabling students to evaluate and make first order designs of SATCOM systems. It also reviews the principles of probability theory to help them accurately determine the margins that must be allowed to account for statistical variation in path loss. The included problem sets and sample solutions provide students with the understanding of contemporary wireless systems needed to participate in the development of future systems. **Wireless Communications Principles, Theory and Methodology** John Wiley & Sons "Provides the reader with an overall picture of

wireless communications, carefully expounds its technical details, not only covering a variety of main results and conclusions but also revealing the methodology used for their derivations"-- *Principles of Communications Systems, Modulation, and Noise Human Centred Intelligent Systems Proceedings of KES-HCIS 2021 Conference Springer Nature*

This book highlights new trends and challenges in intelligent systems, which play an essential part in the digital transformation of many areas of science and practice. It includes papers offering a deeper understanding of the human-centred perspective on artificial intelligence, of intelligent value co-creation, ethics, value-oriented digital models, transparency, and intelligent digital architectures and engineering to support digital services and intelligent systems, the transformation of structures in digital business and intelligent systems based on human practices, as well as the study of interaction and co-adaptation of humans and systems. All papers were originally presented at the International KES Conference on Human Centred Intelligent Systems 2021 (KES HCIS 2021) held on June 14-16, 2021 in the KES Virtual Conference Centre. *Innovations in Smart Cities Applications Edition 3 The Proceedings of the 4th International Conference on Smart City Applications Springer Nature*

This book highlights original research and recent advances in various fields related to smart cities and their applications. It gathers papers presented at the Fourth International Conference on Smart City Applications (SCA19), held on October 2-4, 2019, in Casablanca, Morocco. Bringing together contributions by prominent researchers from around the globe, the book offers an invaluable instructional and research tool for courses on computer science, electrical engineering, and urban sciences. It is also an excellent reference guide for professionals, researchers, and academics in the field of smart cities. This book covers topics including: • Smart Citizenship • Smart Education • Digital Business and Smart Governance • Smart Health Care • New Generation of Networks and Systems for Smart Cities • Smart Grids and Electrical Engineering • Smart Mobility • Smart Security • Sustainable Building • Sustainable Environment Networking Fundamentals Wide, Local and Personal Area Communications *John Wiley & Sons*

Focusing on the physical layer, *Networking Fundamentals* provides essential information on networking technologies that are used in both wired and wireless networks designed for local area networks (LANs) and wide-area networks (WANs). The book starts with an overview of telecommunications followed by four parts, each including several chapters. Part I explains the principles of design and analysis of information networks at the lowest layers. It concentrates on the characteristics of the transmission media, applied transmission and coding, and medium access control. Parts II and III are devoted to detailed descriptions of important WANs and LANs respectively with Part II describing the wired Ethernet and Internet as well as cellular networks while Part III covers popular wired LANs and wireless LANs (WLANs), as well as wireless personal area network (WPAN) technologies. Part IV concludes by examining security, localization and sensor networking. The partitioned structure of the book allows flexibility in teaching the material, encouraging the reader to grasp the more simple concepts and to build on these foundations when moving onto more complex information. *Networking Fundamentals* contains numerous illustrations, case studies and tables to supplement the text, as well as exercises with solutions at the end of each chapter. There is also a companion website with password protected solutions manual for instructors along with other useful resources. Provides a unique holistic approach covering wireless communication technologies, wired technologies and networking One of the first textbooks to integrate all aspects of information networks while placing an emphasis on the physical layer and systems engineering aspects Contains numerous illustrations, case studies and tables to supplement the text, as well as exercises with solutions at the end of each chapter Companion website with password protected solutions manual and other useful resources *Introduction to MIMO Communications Cambridge University Press*

This accessible guide contains everything you need to get up to speed on the theory and implementation of MIMO techniques. *Principles of Modern Communication Systems Cambridge University Press*

An accessible, yet mathematically rigorous, one-semester textbook, engaging students through use of problems, examples, and applications. *Satellite Communications Systems Engineering Atmospheric Effects, Satellite Link Design and System Performance John Wiley & Sons*

Provides an invaluable, detailed and up-to-date coverage of atmospheric effects and their impact on satellite communications systems design and performance. Significant progress has been made in the last decade in the understanding and modelling of propagation effects on radio wave propagation in the bands utilized for satellite communications. This book provides a comprehensive description and analysis of all atmospheric effects of concern for today's satellite systems, and the tools necessary to design the links and to evaluate system performance. This book will serve as an excellent reference to communications engineers, wireless network and system engineers, system designers and graduate students in satellite communications and related areas. Key features: Provides the state of the art in communications satellite link design and performance from the practicing engineer perspective - concise descriptions, specific procedures and comprehensive solutions Contains the calculations and tools necessary for evaluating system performance Provides a complete evaluation of atmospheric effects, modelling and prediction Focuses on the satellite free-space link as the primary element in the design and performance for satellite communications, and recognizes the importance of free-space considerations such as atmospheric effects, frequency of operation and adaptive mitigation techniques a solutions manual is available directly from the author (lippolit@gwu.edu)

Antennas and Propagation for Wireless Communication Systems 2nd Edition John Wiley & Sons

Antennas and propagation are of fundamental importance to the coverage, capacity and quality of all wireless communication systems. This book provides a solid grounding in antennas and propagation, covering terrestrial and satellite radio systems in both mobile and fixed contexts. Building on the highly successful first edition, this fully updated text features significant new material and brand new exercises and supplementary materials to support course tutors. A vital source of information for practising and aspiring wireless communication engineers as well as for students at postgraduate and senior undergraduate levels, this book provides a fundamental grounding in the principles of antennas and propagation without excessive recourse to mathematics. It also equips the reader with practical prediction techniques for the design and analysis of a very wide range of common wireless communication systems. Including: Overview of the fundamental electromagnetic principles underlying propagation and antennas.

Basic concepts of antennas and their application to specific wireless systems. Propagation measurement, modelling and prediction for fixed links, macrocells, microcells, picocells and megacells Narrowband and wideband channel modelling and the effect of the channel on communication system performance. Methods that overcome and transform channel impairments to enhance performance using diversity, adaptive antennas and equalisers. Key second edition updates: New chapters on Antennas for Mobile Systems and Channel Measurements for Mobile Radio Systems. Coverage of new technologies, including MIMO antenna systems, Ultra Wideband (UWB) and the OFDM technology used in Wi-Fi and WiMax systems. Many new propagation models for macrocells, microcells and picocells. Fully revised and expanded end-of-chapter exercises. The Solutions Manual can be requested from http://www.wiley.com/go/saunders_antennas_2e

Theory and Design of Digital Communication Systems *Cambridge University Press* Providing the underlying principles of digital communication and the design techniques of real-world systems, this textbook prepares senior undergraduate and graduate students for the engineering practices required in industry. Covering the core concepts, including modulation, demodulation, equalization, and channel coding, it provides step-by-step mathematical derivations to aid understanding of background material. In addition to describing the basic theory, the principles of system and subsystem design are introduced, enabling students to visualize the intricate connections between subsystems and understand how each aspect of the design supports the overall goal of achieving reliable communications. Throughout the book, theories are linked to practical applications with over 250 real-world examples, whilst 370 varied homework problems in three levels of difficulty enhance and extend the text material. With this textbook, students can understand how digital communication systems operate in the real world, learn how to design subsystems, and evaluate end-to-end performance with ease and confidence.

Distributed Computer and Communication Networks 22nd International Conference, DCCN 2019, Moscow, Russia, September 23-27, 2019, Revised Selected Papers *Springer Nature* This book constitutes the refereed proceedings of the 22nd International Conference on Distributed and Computer and Communication Networks, DCCN 2019, held in Moscow, Russia, in September 2019. The 44 full papers and 2 short papers were carefully reviewed and selected from 174 submissions. The papers cover the following topics: Computer and Communication Networks, Analytical Modeling of Distributed Systems, and Distributed Systems Applications.

Wireless Communications *John Wiley & Sons* "Professor Andreas F. Molisch, renowned researcher and educator, has put together the comprehensive book, *Wireless Communications*. The second edition, which includes a wealth of new material on important topics, ensures the role of the text as the key resource for every student, researcher, and practitioner in the field." —Professor Moe Win, MIT, USA

Wireless communications has grown rapidly over the past decade from a niche market into one of the most important, fast moving industries. Fully updated to incorporate the latest research and developments, *Wireless Communications, Second Edition* provides an authoritative overview of the principles and applications of mobile communication technology. The author provides an in-depth analysis of current treatment of the area, addressing both the traditional elements, such as Rayleigh fading, BER in flat fading channels, and equalisation, and more recently emerging topics such as multi-user detection in CDMA systems, MIMO systems, and cognitive radio. The dominant wireless standards; including cellular, cordless and wireless LANs; are discussed. Topics featured include: wireless propagation channels, transceivers and signal processing, multiple access and advanced transceiver schemes, and standardised wireless systems. Combines mathematical descriptions with intuitive explanations of the physical facts, enabling readers to acquire a deep understanding of the subject. Includes new chapters on cognitive radio, cooperative communications and relaying, video coding, 3GPP Long Term Evolution, and WiMax; plus significant new sections on multi-user MIMO, 802.11n, and information theory. Companion website featuring: supplementary material on 'DECT', solutions manual and presentation slides for instructors, appendices, list of abbreviations and other useful resources.

Guide to Wireless Communications *Cengage Learning* **GUIDE TO WIRELESS COMMUNICATIONS, 3rd Edition** is designed for an entry level course in wireless data communications. The text covers the fundamentals wireless communications and provides an overview of protocols, transmission methods, and IEEE standards. **GUIDE TO WIRELESS COMMUNICATIONS, 3rd Edition** examines the broad range of wireless communications technologies available beginning with the basics of radio frequency and wireless data transmission and progressing to the protocols and mechanisms that every wireless network technician should understand. Key topics cover several technologies for Wireless Personal Area Networks (WPANs), Wireless Local Area Networks (WLANs), Wireless Metropolitan Area Networks (WMANs), and Wireless Wide Area Networks (WWANs) giving an overview of the most current cellular and satellite communications. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Fundamentals of Wireless Communication *Cambridge University Press* 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.

Introduction to Communication Systems *Cambridge University Press* An accessible undergraduate textbook introducing key fundamental principles behind modern communication systems, supported by exercises, software problems and lab exercises.

Wireless Communications: Principles And Practice, 2/E *Pearson Education India* **Wireless Communications and Networks Recent Advances** *BoD - Books on Demand* This book will provide a comprehensive technical guide covering fundamentals, recent advances and open issues in wireless communications and networks to the readers. The objective of the book is to serve as a valuable reference for students, educators, scientists, faculty members, researchers, engineers and research strategists in these rapidly evolving fields and to encourage them to actively explore these broad, exciting and rapidly evolving research areas.

Rf Power Amplifiers Solutions Manual *Wiley-Blackwell* **E-Healthcare Systems and Wireless Communications: Current and Future Challenges** *IGI Global* There has been a dramatic increase in the utilization of wireless technologies in healthcare systems as a consequence of the wireless ubiquitous and pervasive communications revolution. Emerging information and wireless communication technologies

in health and healthcare have led to the creation of e-health systems, also known as e-healthcare, which have been drawing increasing attention in the public and have gained strong support from government agencies and various organizations. **E-Healthcare Systems and Wireless Communications: Current and Future Challenges** explores the developments and challenges associated with the successful deployment of e-healthcare systems. The book combines research efforts in different disciplines including pervasive wireless communications, wearable computing, context-awareness, sensor data fusion, artificial intelligence, neural networks, expert systems, databases, and security. This work serves as a comprehensive reference for graduate students in bioengineering and also provides solutions for medical researchers who are faced with the challenge of designing and implementing a cost-effective pervasive and ubiquitous wireless communication system. **Fundamentals of Digital Communication** *Cambridge University Press* This is a concise presentation of the concepts underlying the design of digital communication systems, without the detail that can overwhelm students. Many examples, from the basic to the cutting-edge, show how the theory is used in the design of modern systems and the relevance of this theory will motivate students. The theory is supported by practical algorithms so that the student can perform computations and simulations. Leading edge topics in coding and wireless communication make this an ideal text for students taking just one course on the subject. **Fundamentals of Digital Communications** has coverage of turbo and LDPC codes in sufficient detail and clarity to enable hands-on implementation and performance evaluation, as well as 'just enough' information theory to enable computation of performance benchmarks to compare them against. Other unique features include space-time communication and geometric insights into noncoherent communication and equalization. **Discrete-Time Linear Systems Theory and Design with Applications** *Springer Science & Business Media* **Discrete-Time Linear Systems: Theory and Design with Applications** combines system theory and design in order to show the importance of system theory and its role in system design. The book focuses on system theory (including optimal state feedback and optimal state estimation) and system design (with applications to feedback control systems and wireless transceivers, plus system identification and channel estimation). **McGraw-Hill Concise Encyclopedia of Science & Technology** *McGraw-Hill Professional Publishing* Features more than seven thousand entries covering topics, terms, and concepts in math, science, and technology. **Wireless Communications Principles and Practice** *Prentice Hall* For cellular radio engineers and technicians. The leading book on wireless communications offers a wealth of practical information on the implementation realities of wireless communications. This book also contains up-to-date information on the major wireless communications standards from around the world. Covers every fundamental aspect of wireless communications, from cellular system design to networking, plus world-wide standards, including ETACS, GSM, and PDC. **Principles of Electronic Communication Systems** *McGraw-Hill Education* **Principles of Electronic Communication Systems** 4th edition provides the most up-to-date survey available for students taking a first course in electronic communications. Requiring only basic algebra and trigonometry, the new edition is notable for its readability, learning features and numerous full-color photos and illustrations. A systems approach is used to cover state-of-the-art communications technologies, to best reflect current industry practice. This edition contains greatly expanded and updated material on the Internet, cell phones, and wireless technologies. Practical skills like testing and troubleshooting are integrated throughout. A brand-new **Laboratory & Activities Manual** provides both hands-on experiments and a variety of other activities, reflecting the variety of skills now needed by technicians. A new Online Learning Center web site is available, with a wealth of learning resources for students. **Personal Wireless Communications** IFIP TC6 9th International Conference, PWC 2004, Delft, The Netherlands, September 21-23, 2004, *Proceedings* *Springer* The IFIP TC-6 9th International Conference on Personal Wireless Communications, PWC 2004 is the main conference of the IFIP Working Group 6.8, Mobile and Wireless Communications. The field of personal wireless communications is steadily growing in importance, from an academic, industrial and societal point of view. The dropping cost of WLAN and short-range technologies such as Bluetooth and Zigbee is causing the proliferation of personal devices and appliances equipped with radio interfaces. Together with the gradual deployment of powerful wireless infrastructure networks, such as 3G cellular systems and WLAN hotspots, the conditions are being created for a affordable ubiquitous communication involving virtually any artifact. This enables new application areas such as ambient intelligence where a world of devices, sensors and actuators surrounding us use wireless technology to create systems that assist us in an unobtrusive way. It also allows the development of personal and personalized environments that accompany a person wherever he or she goes. Examples are Personal Area Networks (PAN) physically surrounding a person, and personal networks with a potentially global reach. PWC 2004 reflects these developments, which are happening on a global scale. Researchers from all over the world, and in particular a large number from Asia, made contributions to the conference. There were 100 submissions. After a thorough reviewing process, 25 full papers and 13 short papers were retained for presentation in the technical sessions. The papers cover the whole range of wireless and mobile technologies: cellular systems, WLAN, ad hoc and sensor networks, host and network mobility, transport protocols for wireless systems, and the physical layer. **Digital Communication** *Springer Science & Business Media* This book is for designers and would-be designers of digital communication systems. The general approach of this book is to extract the common principles underlying a range of media and applications and present them in a unified framework. Digital Communication is relevant to the design of a variety of systems, including voice and video digital cellular telephone, digital CATV distribution, wireless LANs, digital subscriber loop, metallic Ethernet, voiceband data modems, and satellite communication systems. New in this Third Edition: New material on recent advances in wireless communications, error-control coding, and multi-user communications has been added. As a result, two new chapters have been added, one on the theory of MIMO channels, and the other on diversity techniques for mitigating fading. Error-control coding has been rewritten to reflect the current state of the art. Chapters 6 through 9 from the Second Edition have been reorganized and streamlined to highlight pulse-amplitude modulation, becoming the new Chapters 5 through 7. Readability is increased by relegating many of the more detailed derivations to appendices and exercise solutions, both of which are included in the book.

Exercises, problems, and solutions have been revised and expanded. Three chapters from the previous edition have been moved to the book's Web site to make room for new material. This book is ideal as a first-year graduate textbook, and is essential to many industry professionals. The book is attractive to both audiences through the inclusion of many practical examples and a practical flavor in the choice of topics. Digital Communication has a Web site at : <http://www.ece.gatech.edu/~barry/digital/>, where the reader may find additional information from the Second Edition, other supplementary materials, useful links, a problem solutions manual, and errata.

Wireless and Mobile Networks *John Wiley & Sons* A cellular network or mobile network is a wireless network distributed over land areas called cells, each served by at least one fixed-location transceiver, known as a cell site or base station. In a cellular network, each cell uses a different set of frequencies from neighboring cells, to avoid interference and provide guaranteed bandwidth within each cell. When joined together these cells provide radio coverage over a wide geographic area. This enables a large number of portable transceivers (e.g., mobile phones, pagers, etc.) to communicate with each other and with fixed transceivers and telephones anywhere in the network, via base stations, even if some of the transceivers are moving through more than one cell during transmission. Cellular networks offer a number of desirable features: More capacity than a single large transmitter, since the same frequency can be used for multiple links as long as they are in different cells Mobile devices use less power than with a single transmitter or satellite since the cell towers are closer Larger coverage area than a single terrestrial transmitter, since additional cell towers can be added indefinitely and are not limited by the horizon Major telecommunications providers have deployed voice and data cellular networks over most of the inhabited land area of the Earth. This allows mobile phones and mobile computing devices to be connected to the public switched telephone network and public Internet. Private cellular networks can be used for research or for large organizations and fleets, such as dispatch for local public safety agencies or a taxicab company.

Theory and Applications of OFDM and CDMA Wideband Wireless Communications *John Wiley & Sons* Theory and Applications of OFDM and CDMA is an ideal foundation textbook for those seeking a sound knowledge of this fast-developing field of wideband communications. The advanced transmission techniques of OFDM, applied in wireless LANs and in digital and video broadcasting, and CDMA, the foundation of 3G mobile communications, have been part of almost every communication system that has been designed in recent years, with both offering a high degree of flexibility in adjusting the system to the requirements of the application and to the impairments caused by the transmission channel. Starting from the basics of digital transmission theory, the reader gains a comprehensive overview of the underlying ideas of these techniques and their strengths and weaknesses under various conditions. In this context, the specific requirements of the mobile radio channel and their relevance for the design of digital transmission systems are discussed and related to the items of channel coding and modulation. Clear explanation of the basics of digital communications, mobile radio channels, coding and modulation, OFDM as a multicarrier system and CDMA as an application of spread spectrum techniques Discusses the most important mobile radio and digital broadcasting systems that use OFDM and CDMA, and explains in detail the underlying ideas for the choice of system parameters Progresses from the fundamentals of wideband communication through to modern applications Includes a Companion Website featuring a solutions manual, electronic versions of the figures and other useful resources This volume will be an invaluable resource to advanced undergraduate students and first/second year postgraduates of electrical and engineering and telecommunications. It will also appeal to practising engineers, researchers and those in academia who wish to expand their knowledge on modern aspects of digital communications and systems in a mobile radio environment.

Digital Communication *Springer Science & Business Media* This book concerns digital communication. Specifically, we treat the transport of bit streams from one geographical location to another over various physical media, such as wire pairs, coaxial cable, optical fiber, and radio. We also treat multiple-access channels, where there are potentially multiple transmitters and receivers sharing a common medium. Ten years have elapsed since the Second Edition, and there have been remarkable advances in wireless communication, including cellular telephony and wireless local-area networks. This Third Edition expands treatment of communication theories underlying wireless, and especially advanced techniques involving multiple antennas, which turn the traditional single-input single-output channel into a multiple-input multiple-output (MIMO) channel. This is more than a trivial advance, as it stimulates many advanced techniques such as adaptive antennas and coding techniques that take advantage of space as well as time. This is reflected in the addition of two new chapters, one on the theory of MIMO channels, and the other on diversity techniques for mitigating fading. The field of error-control coding has similarly undergone tremendous changes in the past decade, brought on by the invention of turbo codes in 1993 and the subsequent rediscovery of Gallager's low-density parity-check codes. Our treatment of error-control coding has been rewritten to reflect the current state of the art. Other materials have been reorganized and reworked, and three chapters from the previous edition have been moved to the book's Web site to make room.

Solutions Manual for RF and Microwave Wireless Systems Refer to G. Telecki X6317 *Wiley-Interscience* A comprehensive introduction to the hardware, parameters, and architectures of RF/microwave wireless systems As the basis for some of the hottest technologies of the new millennium, radio frequency (RF) and microwave wireless systems rapidly propel us toward a future in which the transmission of voice, video, and data communications will be possible anywhere in the world through the use of simple, handheld devices. This book provides scientists and engineers with clear, thorough, up-to-date explanations of all aspects of RF and microwave wireless systems, including general hardware components, system parameters, and architectures. Renowned authority Kai Chang covers both communication and radar/sensor systems and extends the discussion to other intriguing topics, from global positioning systems (GPS) to smart highways and smart automobiles. With an emphasis on basic operating principles, Dr. Chang reviews waves and transmission lines, examines modulation and demodulation and multiple-access techniques, and helps bridge the gap between RF/microwave engineering and communication system design. Ample practical examples of components and system configurations and nearly 300 illustrations and photographs complete this timely and indispensable resource. An Instructor's Manual presenting

detailed solutions to all the problems in the book is available from the Wiley editorial department **Wireless Communications** *Cambridge University Press* Wireless technology is a truly revolutionary paradigm shift, enabling multimedia communications between people and devices from any location. It also underpins exciting applications such as sensor networks, smart homes, telemedicine, and automated highways. This book provides a comprehensive introduction to the underlying theory, design techniques and analytical tools of wireless communications, focusing primarily on the core principles of wireless system design. The book begins with an overview of wireless systems and standards. The characteristics of the wireless channel are then described, including their fundamental capacity limits. Various modulation, coding, and signal processing schemes are then discussed in detail, including state-of-the-art adaptive modulation, multicarrier, spread spectrum, and multiple antenna techniques. The concluding chapters deal with multiuser communications, cellular system design, and ad-hoc network design. Design insights and tradeoffs are emphasized throughout the book. It contains many worked examples, over 200 figures, almost 300 homework exercises, over 700 references, and is an ideal textbook for students. **Principles and Applications of Narrowband Internet of Things (NBloT)** *IGI Global* The internet of things (IoT) has emerged as a trending technology that is continually being implemented into various practices within the field of engineering and science due to its versatility and various benefits. Despite the levels of innovation that IoT provides, researchers continue to search for networks that maintain levels of sustainability and require fewer resources. A network that measures up to these expectations is Narrowband IoT (NBloT), which is a low power wide area version of IoT networks and is suitable for larger projects. Engineers and other industry professionals are in need of in-depth knowledge on this growing technology and its various applications. **Principles and Applications of Narrowband Internet of Things (NBloT)** is an essential reference source that provides an in-depth understanding on the recent advancements of NBloT as well as the crucial roles of emerging low power IoT networks in various regions of the world. Featuring research on topics such as security monitoring, sustainability, and cloud infrastructure, this book is ideally designed for developers, engineers, practitioners, researchers, students, managers, and policymakers seeking coverage on the large-scale deployment and modern applications of NBloT. **Communications Engineering Essentials for Computer Scientists and Electrical Engineers** *Wiley-IEEE Press* Communications technologies increasingly pervade our everyday lives, yet the underlying principles are a mystery to most. Even among engineers and technicians, understanding of this complex subject remains limited. However, there is undeniably a growing need for all technology disciplines to gain intimate awareness of how their fields are affected by a more densely networked world. The computer science field in particular is profoundly affected by the growing dominance of communications, and computer scientists must increasingly engage with electrical engineering concepts. Yet communications technology is often perceived as a challenging subject with a steep learning curve. To address this need, the authors have transformed classroom-tested materials into this accessible textbook to give readers an intimate understanding of fundamental communications concepts. Readers are introduced to the key essentials, and each selected topic is discussed in detail to promote mastery. Engineers and computer scientists will gain an understanding of concepts that can be readily applied to their respective fields, as well as provide the foundation for more advanced study of communications. Provides a thorough grounding in the basics by focusing on select key concepts Clarifies comprehension of the subject via detailed explanation and illustration Helps develop an intuitive sense of both digital and analog principles Introduces key broadcasting, wireless and wired systems Helps bridge the knowledge gap between software and electrical engineering Requires only basic calculus and trigonometry skills Classroom tested in undergraduate CS and EE programs **Communications Engineering** by Lee, Chiu, and Lin will give advanced undergraduates in computer science and beginning students of electrical engineering a rounded understanding of communications technologies. The book also serves as a key introduction to specialists in industry, or anyone who desires a working understanding of communications technologies. **Machine Learning Techniques for Smart City Applications: Trends and Solutions** *Springer Nature* This book discusses the application of different machine learning techniques to the sub-concepts of smart cities such as smart energy, transportation, waste management, health, infrastructure, etc. The focus of this book is to come up with innovative solutions in the above-mentioned issues with the purpose of alleviating the pressing needs of human society. This book includes content with practical examples which are easy to understand for readers. It also covers a multi-disciplinary field and, consequently, it benefits a wide readership including academics, researchers, and practitioners. **Wireless Video Communications Second to Third Generation and Beyond** *John Wiley & Sons* Bridging the gap between the video compression and communication communities, this unique volume provides an all-encompassing treatment of wireless video communications, compression, channel coding, and wireless transmission as a joint subject. **WIRELESS VIDEO COMMUNICATIONS** begins with relatively simple compression and information theoretical principles, continues through state-of-the-art and future concepts, and concludes with implementation-ready system solutions. This book's deductive presentation and broad scope make it essential for anyone interested in wireless communications. It systematically converts the lessons of Shannon's information theory into design principles applicable to practical wireless systems. It provides in a comprehensive manner "implementation-ready" overall system design and performance studies, giving cognizance to the contradictory design requirements of video quality, bit rate, delay, complexity error resilience, and other related system design aspects. Topics covered include information theoretical foundations block-based and convolutional channel coding very-low-bit-rate video codecs and multimode videophone transceivers high-resolution video coding using both proprietary and standard schemes CDMA/OFDM systems, third-generation and beyond adaptive video systems. **WIRELESS VIDEO COMMUNICATIONS** is a valuable reference for postgraduate researchers, system engineers, industrialists, managers and visual communications practitioners. **Wireless Communications Principles and Practice** *Institute of Electrical & Electronics Engineers(IEEE)* Building on his classic edition, Rappaport covers the fundamental issues impacting all wireless networks and reviews virtually every important new wireless standard and technological development. He illustrates each key concept with practical examples, thoroughly explained and

solved step by step.