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### GCWNOW - CARLO ANGEL

The mobile information society has revolutionised the way we work, communicate and socialise. Mobile phones, wireless free communication and associated technologies such as WANS, LANs, and PANs, cellular networks, SMS, 3G, Bluetooth, Blackberry and WiFi are seen as the driving force of the advanced society. The roots of today's explosion in wireless technology can be traced back to the deregulation of AT&T in the US and the Post Office and British Telecom in the UK, as well as Nokia's groundbreaking approach to the design and marketing of the mobile phone. Providing a succinct introduction to the field of mobile and wireless communications, this book: Begins with the basics of radio technology and offers an overview of key scientific terms and concepts for the student reader Addresses the social and economic implications of mobile and wireless technologies, such as the effects of the deregulation of telephone systems Uses a range of case studies and examples of mobile and wireless communication, legislation and practices from the UK, US, Canada, mainland Europe, the Far East and Australia Contains illustrations and tables to help explain technical concepts and show the growth and change in mobile technologies Features a glossary of technical terms, annotated further reading at the end of each chapter and web links for further study and research Mobile and Wireless Communications is a key resource for students on a range of social scientific courses, including media and communications, sociology, public policy, and management studies, as well as a useful introduction to the field for researchers and general readers.

This book presents the state of the art in the field of mobile and wireless networks, and anticipates the arrival of new standards and architectures. It focuses on wireless networks, starting with small personal area networks and progressing onto the very large cells of wireless regional area networks, via local area networks dominated by WiFi technology, and finally metropolitan networks. After a description of the existing 2G and 3G standards, with LTE being the latest release, LTE-A is addressed, which is the first 4G release, and a first indication of 5G is provided as seen through the standardizing bodies. 4G technology is described in detail along with the different LTE extensions related to the massive arrival of femtocells, the increase to a 1 Gbps capacity, and relay techniques. 5G is also discussed in order to show what can be expected in the near future. The Internet of Things is explained in a specific chapter due to its omnipresence in the literature, ad hoc and mesh networks form another important chapter as they have made a comeback after a long period of near hibernation, and the final chapter discusses a particularly recent topic: Mobile-Edge Computing (MEC) servers.

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.

This book describes the current and most probable future wireless security solutions. The focus is on the technical discussion of existing systems and new trends like Internet of Things (IoT). It also

discusses existing and potential security threats, presents methods for protecting systems, operators and end-users, describes security systems attack types and the new dangers in the ever-evolving Internet. The book functions as a practical guide describing the involvement of the wireless environment, and how to ensure the fluent continuum of the new functionalities, whilst minimizing the potential risks in network security.

The Accessible Guide to Modern Wireless Communication for Undergraduates, Graduates, and Practising Electrical Engineers Wireless communication is a critical discipline of electrical engineering and computer science, yet the concepts have remained elusive for students who are not specialists in the area. This text makes digital communication and receiver algorithms for wireless communication broadly accessible to undergraduates, graduates, and practicing electrical engineers. Notably, the book builds on a signal processing foundation and does not require prior courses on analog or digital communication. Introduction to Wireless Digital Communication establishes the principles of communication, from a digital signal processing perspective, including key mathematical background, transmitter and receiver signal processing algorithms, channel models, and generalizations to multiple antennas. Robert Heath's "less is more" approach focuses on typical solutions to common problems in wireless engineering. Heath presents digital communication fundamentals from a signal processing perspective, focusing on the complex pulse amplitude modulation approach used in most commercial wireless systems. He describes specific receiver algorithms for implementing wireless communication links, including synchronization, carrier frequency offset estimation, channel estimation, and equalization. While most concepts are presented for systems with single transmit and receive antennas, Heath concludes by extending those concepts to contemporary MIMO systems. To promote learning, each chapter includes previews, bullet-point summaries, examples, and numerous homework problems to help readers test their knowledge. Basics of wireless communication: applications, history, and the central role of signal processing Digital communication essentials: components, channels, distortion, coding/decoding, encryption, and modulation/demodulation Signal processing: linear time invariant systems, probability/random processes, Fourier transforms, derivation of complex baseband signal representation and equivalent channels, and multi-rate signal processing Least-squared estimation techniques that build on the linear algebra typically taught to electrical engineering undergraduates Complex pulse amplitude modulation: symbol mapping, constellations, signal bandwidth, and noise Synchronization, including symbol, frame, and carrier frequency offset Frequency selective channel estimation and equalization MIMO techniques using multiple transmit and/or receive antennas, including SIMO, MISO, and MIMO-OFDM Register your product at [informit.com/register](http://informit.com/register) for convenient access to downloads, updates, and corrections as they become available.

Wireless communication is one of the fastest growing industry segments today. Many types of wireless networks are now being used for applications such as personal communication, entertainment, rural and urban healthcare, smart home building, inventory control, and surveillance. This book introduces the basic concepts of wireless networks and mobile computing to give engineering students at the undergraduate/graduate level a solid background in the field. It also looks at the latest research and challenging problems in the field to serve as a reference for advanced-level researchers. Wireless Networks and Mobile Computing begins with an introduction to the different types of wireless networks, including Wi-Fi, ZigBee, cellular mobile, ad hoc, cognitive radio, wireless mesh, and wireless sensor. Subsequent chapters address more advanced topics such as: Mobility, bandwidth, and node location management issues in mobile networks Message communication techniques and protocols in ad hoc networks Recent research and future direction of wireless local area networks (WLANs) Deployment of sensor nodes in wireless sensor networks (WSNs) Energy-efficient communication in wireless networks Security aspects of wireless communication The book in-

cludes exercises at the end of every chapter to help give students a better insight into the topics presented. It includes a number of advanced-level exercises, which are research problems that may be taken up by researchers in the respective areas. This book provides a valuable reference for classroom study/teaching as well as for technology development and research in the relevant areas.

Learn how wireless systems work, how mobility is supported, what the underlying infrastructure is and what interactions are needed among different functional components with INTRODUCTION TO WIRELESS AND MOBILE SYSTEMS, 4e. Focusing on qualitative descriptions and the realistic explanations of relationships between wireless systems and performance parameters, this user-friendly book helps you learn this exciting technology through relevant examples, such as understanding how a cell phone starts working as soon as they get out of an airplane.

The book gives an in-depth study of the principles of the spread spectrum techniques and their applications in mobile communications. It starts with solid foundations in the digital communications that are essential to unequivocal understanding of the CDMA technology, and guides the reader through the fundamentals and characteristics of cellular CDMA communications. Features include: \* A very clear and thorough description of the principles and applications of spread spectrum techniques in multi-user mobile communications. \* Matlab-based worked examples, exercises and practical sessions to clearly explain the theoretical concepts. \* An easy-to-read explanation of the air interface standards used in IS-95 A/B, cdma2000, and 3G WCDMA. \* Clear presentations of the high speed downlink and uplink packet access (HSDPA/HSUPA) techniques used in 3G WCDMA. The book is a very suitable introduction to the principles of CDMA communications for senior undergraduate and graduate students, as well researchers and engineers in industry who are looking to develop their expertise. A very clear and thorough description of the principles and applications of spread spectrum techniques in multi-user mobile communications. Matlab-based worked examples, exercises and practical sessions to clearly explain the theoretical concepts. An easy-to-read explanation of the air interface standards used in IS-95 A/B, cdma2000, and 3G WCDMA. Clear presentations of the high speed downlink and uplink packet access (HSDPA/HSUPA) techniques used in 3G WCDMA.

This book, edited and authored by world leading experts, gives a review of the principles, methods and techniques of important and emerging research topics and technologies in wireless communications and transmission techniques. The reader will: Quickly grasp a new area of research Understand the underlying principles of a topic and its application Ascertain how a topic relates to other areas and learn of the research issues yet to be resolved Reviews important and emerging topics of research in wireless technology in a quick tutorial format Presents core principles in wireless transmission theory Provides reference content on core principles, technologies, algorithms, and applications Includes comprehensive references to journal articles and other literature on which to build further, more specific and detailed knowledge

An accessible introduction to the theory of space-time wireless communications.

Summarizes and surveys current LTE technical specifications and implementation options for engineers and newly qualified support staff Concentrating on three mobile communication technologies, GSM, 3G-WCDMA, and LTE—while majorly focusing on Radio Access Network (RAN) technology—this book describes principles of mobile radio technologies that are used in mobile phones and service providers' infrastructure supporting their operation. It introduces some basic concepts of mobile network engineering used in design and rollout of the mobile network. It then follows up with principles, design constraints, and more advanced insights into radio interface protocol stack, operation, and dimensioning for three major mobile network technologies: Global System Mobile (GSM) and third (3G) and fourth generation (4G) mobile technologies. The concluding sections of

the book are concerned with further developments toward next generation of mobile network (5G). Those include some of the major features of 5G such as a New Radio, NG-RAN distributed architecture, and network slicing. The last section describes some key concepts that may bring significant enhancements in future technology and services experienced by customers. Introduction to Mobile Network Engineering: GSM, 3G-WCDMA, LTE and the Road to 5G covers the types of Mobile Network by Multiple Access Scheme; the cellular system; radio propagation; mobile radio channel; radio network planning; EGPRS - GPRS/EDGE; Third Generation Network (3G), UMTS; High Speed Packet data access (HSPA); 4G-Long Term Evolution (LTE) system; LTE-A; and Release 15 for 5G. Focuses on Radio Access Network technologies which empower communications in current and emerging mobile network systems Presents a mix of introductory and advanced reading, with a generalist view on current mobile network technologies Written at a level that enables readers to understand principles of radio network deployment and operation Based on the author's post-graduate lecture course on Wireless Engineering Fully illustrated with tables, figures, photographs, working examples with problems and solutions, and section summaries highlighting the key features of each technology described Written as a modified and expanded set of lectures on wireless engineering taught by the author, Introduction to Mobile Network Engineering: GSM, 3G-WCDMA, LTE and the Road to 5G is an ideal text for post-graduate and graduate students studying wireless engineering, and industry professionals requiring an introduction or refresher to existing technologies.

This book provides an intuitive and accessible introduction to the fundamentals of wireless communications and their tremendous impact on nearly every aspect of our lives. The author starts with basic information on physics and mathematics and then expands on it, helping readers understand fundamental concepts of RF systems and how they are designed. Covering diverse topics in wireless communication systems, including cellular and personal devices, satellite and space communication networks, telecommunication regulation, standardization and safety, the book combines theory and practice using problems from industry, and includes examples of day-to-day work in the field. It is divided into two parts - basic (fundamentals) and advanced (elected topics). Drawing on the author's extensive training and industry experience in standards, public safety and regulations, the book includes information on what checks and balances are used by wireless engineers around the globe and address questions concerning safety, reliability and long-term operation. A full suite of classroom information is included.

Written by an industry expert, Wireless and Mobile Device Security explores the evolution of wired networks to wireless networking and its impact on the corporate world.

Explains the general principles of how wireless systems work, how mobility is supported, the underlying infrastructure and the interactions needed between different functional components.

Provides necessary training in the field of mobile communications.

A comprehensive introduction to the fundamentals of design and applications of wireless communications Wireless Communications Systems starts by explaining the fundamentals needed to understand, design, and deploy wireless communications systems. The author, a noted expert on the topic, explores the basic concepts of signals, modulation, antennas, and propagation with a MATLAB emphasis. The book emphasizes practical applications and concepts needed by wireless engineers. The author introduces applications of wireless communications and includes information on satellite communications, radio frequency identification, and offers an overview with practical insights into the topic of multiple input multiple output (MIMO). The book also explains the security and health effects of wireless systems concerns on users and designers. Designed as a practical resource, the text contains a range of examples and pictures that illustrate many different aspects of wireless technology. The book relies on MATLAB for most of the computations and graphics. This important text: Reviews the basic information needed to understand and design wireless communications systems Covers topics such as MIMO systems, adaptive antennas, direction finding, wireless security, internet of things (IoT), radio frequency identification (RFID), and software defined radio (SDR) Provides examples with a MATLAB emphasis to aid comprehension Includes an online solutions manual and video lectures on selected topics Written for students of engineering and physics and practicing engineers and scientists, Wireless Communications Systems covers the fundamentals of wireless engineering in a clear and concise manner and contains many illustrative examples.

As we all know by now, wireless networks offer many advantages over fixed (or wired) networks. Foremost on that list is mobility, since going wireless frees you from the tether of an Ethernet ca-

ble at a desk. But that's just the tip of the cable-free iceberg. Wireless networks are also more flexible, faster and easier for you to use, and more affordable to deploy and maintain. The de facto standard for wireless networking is the 802.11 protocol, which includes Wi-Fi (the wireless standard known as 802.11b) and its faster cousin, 802.11g. With easy-to-install 802.11 network hardware available everywhere you turn, the choice seems simple, and many people dive into wireless computing with less thought and planning than they'd give to a wired network. But it's wise to be familiar with both the capabilities and risks associated with the 802.11 protocols. And 802.11 Wireless Networks: The Definitive Guide, 2nd Edition is the perfect place to start. This updated edition covers everything you'll ever need to know about wireless technology. Designed with the system administrator or serious home user in mind, it's a no-nonsense guide for setting up 802.11 on Windows and Linux. Among the wide range of topics covered are discussions on: deployment considerations network monitoring and performance tuning wireless security issues how to use and select access points network monitoring essentials wireless card configuration security issues unique to wireless networks With wireless technology, the advantages to its users are indeed plentiful. Companies no longer have to deal with the hassle and expense of wiring buildings, and households with several computers can avoid fights over who's online. And now, with 802.11 Wireless Networks: The Definitive Guide, 2nd Edition, you can integrate wireless technology into your current infrastructure with the utmost confidence.

This practically-oriented, all-inclusive guide covers all the major enabling techniques for current and next-generation cellular communications and wireless networking systems. Technologies covered include CDMA, OFDM, UWB, turbo and LDPC coding, smart antennas, wireless ad hoc and sensor networks, MIMO, and cognitive radios, providing readers with everything they need to master wireless systems design in a single volume. Uniquely, a detailed introduction to the properties, design, and selection of RF subsystems and antennas is provided, giving readers a clear overview of the whole wireless system. It is also the first textbook to include a complete introduction to speech coders and video coders used in wireless systems. Richly illustrated with over 400 figures, and with a unique emphasis on practical and state-of-the-art techniques in system design, rather than on the mathematical foundations, this book is ideal for graduate students and researchers in wireless communications, as well as for wireless and telecom engineers.

The use of the optical spectrum for wireless communications has gained significant interest in recent years. Applications range from low-rate simplex transmission links using existing embedded CMOS cameras in smartphones, referred to as optical camera communications (OCC), mobile light fidelity (LiFi) networking in homes, offices, urban and sub-sea environments to free-space gigabit interconnects in data centers and point-to-point long-range wireless backhaul links outdoors and in space. This exciting book focuses on the use of optical wireless communications (OWC) for mobile use cases. Channel modeling techniques are provided for mobile multiuser scenarios, and will introduce key building blocks to achieve LiFi cellular networks achieving orders of magnitude improvements of area spectral efficiency compared to state-of-the-art. Challenges that arise from moving from a static point-to-point visible light link to a LiFi network that is capable of serving hundreds of mobile and fixed nodes are discussed. An overview of recent standardization activities and the commercialization challenges of this disruptive technology is also provided.

This book describes the technologies involved in all aspects of a large networking system and how the various devices can interact and communicate with each other. Using a bottom up approach the authors demonstrate how it is feasible, for instance, for a cellular device user to communicate, via the all-purpose TCP/IP protocols, with a wireless notebook computer user, traversing all the way through a base station in a cellular wireless network (e.g., GSM, CDMA), a public switched network (PSTN), the Internet, an intranet, a local area network (LAN), and a wireless LAN access point. The information bits, in travelling through this long path, are processed by numerous disparate communication technologies. The authors also describe the technologies involved in infrastructure less wireless networks.

Publisher Description

A comprehensive overview of the 5G landscape covering technology options, most likely use cases and potential system architectures.

Market\_Desc: · Communications Engineers· Network Architects· Network Managers· Consultants· Software Engineers · Senior Undergraduate and Graduate Students Special Features: · Wireless and mobile market is quickly emerging and growing· Network architects and engineers need a comprehensive integration manual· The level and scope of the book is appropriate for decision-makers and network managers· Covers network integration of all 3rd generation mobile and wireless tech-

nologies About The Book: This is a comprehensive book that guides the network designers, engineers, managers, and consultants in the rebuilding and successful deployment of the devices over the new network. Dr. Yi-Bing Lin provides the perfect solution through this expansive guide. He is recognized as one of the top experts in mobile and wireless network architectures worldwide and his co-author is recognized as a close second.

This book provides a preview of emerging wireless technologies and their architectural impact on the future mobile Internet. The reader will find an overview of architectural considerations for the mobile Internet, along with more detailed technical discussion of new protocol concepts currently being considered at the research stage. The first chapter starts with a discussion of anticipated mobile/wireless usage scenarios, leading to an identification of new protocol features for the future Internet. This is followed by several chapters that provide in-depth coverage of next-generation wireless standards, ad hoc and mesh network protocols, opportunistic delivery and delay tolerant networks, sensor network architectures and protocols, cognitive radio networks, vehicular networks, security and privacy, and experimental systems for future Internet research. Each of these contributed chapters includes a discussion of new networking requirements for the wireless scenario under consideration, architectural concepts and specific protocol designs, many still at research stage.

Focusing on qualitative descriptions and realistic explanations of relationships between wireless systems and performance parameters, INTRODUCTION TO WIRELESS AND MOBILE SYSTEMS, 4e explains the general principles of how wireless systems work, how mobility is supported, what the underlying infrastructure is and what interactions are needed among different functional components. Rather than offering a thorough history of the development of wireless technologies or an exhaustive list of work being carried out, the authors help computer science, computer engineering, and electrical engineering students learn this exciting technology through relevant examples, such as understanding how a cell phone starts working as soon as they get out of an airplane. This edition offers the most extensive coverage of Ad Hoc and Sensor Networks available for the course and includes up-to-date coverage of the latest wireless technologies. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Business is on the move - mobile computing must keep up! Innovative technology is making the communication between computers a cordless affair. Mobile computing with laptops, hand helds and mobile phones is increasing the demand for reliable and secure wireless networks. Network engineers and consultants need to create and build cutting-edge wireless networks in both the small business and multi-million dollar corporations. Designing Wireless Networks provides the necessary information on how to design and implement a wireless network. Beginning with detailed descriptions of the various implementations and architectures of wireless technologies and moving to the step-by-step instructions on how to install and deploy a fixed wireless network; this book will teach users with no previous wireless networking experience how to design and build their own wireless network based on the best practices of the Enhanced Services from Lucent Technologies. \* Timely coverage of new technologies: Communication without cables is the future of networking \* Advocates wireless networking solutions for any user, regardless of location, device or connection. \* Written by Experts. The authors are leading WAN authorities at Lucent Technologies. \* No previous wireless experience is assumed, however, readers should have a basic understanding of networking and TCP/IP protocols

This text explains the general principles of how wireless systems work, how mobility is supported, what the underlying infrastructure is and what interactions are needed among different functional components. Designed as a textbook appropriate for undergraduate or graduate courses in Computer Science (CS), Computer Engineering (CE), and Electrical Engineering (EE), Introduction to Wireless and Mobile Systems third edition focuses on qualitative descriptions and the realistic explanations of relationships between wireless systems and performance parameters. Rather than offering a thorough history behind the development of wireless technologies or an exhaustive list of work being carried out, the authors help CS, CE, and EE students learn this exciting technology through relevant examples such as understanding how a cell phone starts working as soon as they get out of an airplane. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Introduction To Wireless Communication System | Modern Wireless Communication System | Mobile Radio Propagation | Spread Spectrum Modulation Techniques | Equalization And Diversity Techniques | Speech Coding And Quantization Techniques Multiple Access Techniques For Wireless Com-

munication | The Cellular Concept System Design Fundamentals | Wireless Networking | Wireless Systems And Standards | Satellite Communication | Modulation Techniques For Mobile Radio | Architecture And Applications Of Wirless Networks | Appendices | Model Question Papers

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.

"This book examines the current scope of theoretical and practical applications on the security of mobile and wireless communications, covering fundamental concepts of current issues, challenges, and solutions in wireless and mobile networks"--Provided by publisher.

Wireless and Mobile Data Networks provides a single point of knowledge about wireless data technologies, including: \* Comprehensive easy-to understand resource on wireless data technologies \* Includes wireless media, data transmission via cellular networks, and network security \* Provides a single point of knowledge about wireless data \* Focuses on wireless data networks, wireless channels, wireless local networks, wide area cellular networks and wireless network security An Instructor Support FTP site is available from the Wiley editorial department.

"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 propaga-

tion 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.

6G Wireless Communications and Mobile Networking introduces the key technologies behind 6G wireless communication and mobile networking to the reader. The book starts with a general vision of 6G technology, which includes the motivation that drives 6G research, the international organizations working on 6G standardization and recent progress in 6G research. Separate chapters on millimeter-wave and terahertz-wave technologies in 6G, the development of latest 6G antenna technology as well as related wireless communication applications are included in the contents. The book also provides details about the 6G network layer, such as self-organizing network driven by network slicing, software-defined networking and network function virtualization. Finally, it covers some popular research topics, including the challenges and solutions to massive 6G IoT networks, 6G cloud/edge computing and big data systems that may appear in the foreseeable future. Key Features: - Provides a complete introduction to 6G vision and technology - Consists of both basic theories and frontier technologies - Separate chapters on key topics such as 6G physical layers, millimeter wave and terahertz technology and advanced antenna arrays - Covers future trends and applications such as intelligent management systems, 6G IoT networks, cloud/edge computing and big data applications This focused reference will significantly enhance the knowledge of engineering students and apprentices involved in the field of telecommunications. Readers interested in cutting-edge wireless networking technologies will also benefit from the information provided.

A Coherent Systems View of Wireless and Cellular Network Design and Implementation Written for senior-level undergraduates, first-year graduate students, and junior technical professionals, *Introduction to Wireless Systems* offers a coherent systems view of the crucial lower layers of today's

cellular systems. The authors introduce today's most important propagation issues, modulation techniques, and access schemes, illuminating theory with real-world examples from modern cellular systems. They demonstrate how elements within today's wireless systems interrelate, clarify the trade-offs associated with delivering high-quality service at acceptable cost, and demonstrate how systems are designed and implemented by teams of complementary specialists. Coverage includes Understanding the challenge of moving information wirelessly between two points Explaining how system and subsystem designers work together to analyze, plan, and implement optimized wireless systems Designing for quality reception: using the free-space range equation, and accounting for thermal noise Understanding terrestrial channels and their impairments, including shadowing and multipath reception Reusing frequencies to provide service over wide areas to large subscriber bases Using modulation: frequency efficiency, power efficiency, BER, bandwidth, adjacent-channel interference, and spread-spectrum modulation Implementing multiple access methods, including FDMA, TDMA, and CDMA Designing systems for today's most common forms of traffic—both "bursty" and "streaming" Maximizing capacity via linear predictive coding and other speech compression techniques Setting up connections that support reliable communication among users Introduction to Wireless Systems brings together the theoretical and practical knowledge readers need to participate effectively in the planning, design, or implementation of virtually any wireless system.

This text explains the general principles of how wireless systems work, how mobility is supported, what the underlying infrastructure is and what interactions are needed among different functional components. Designed as a textbook appropriate for undergraduate or graduate courses in Computer Science (CS), Computer Engineering (CE), and Electrical Engineering (EE), *Introduction to Wireless and Mobile Systems* third edition focuses on qualitative descriptions and the realistic explanations of relationships between wireless systems and performance parameters. Rather than offering a thorough history behind the development of wireless technologies or an exhaustive list of work being carried out, the authors help CS, CE, and EE students learn this exciting technology through relevant examples such as understanding how a cell phone starts working as soon as they get out of an airplane.