

# Communication Engineering By Chitode

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Basic Electronics - BL Theraja 2007

Aims of the Book: The foremost and primary aim of the book is to meet the requirements of students pursuing following courses of study: 1. Diploma in Electronics and Communication Engineering (ECE)-3-year course offered by various Indian and foreign

polytechnics and technical institutes like city and guilds of London Institute (CGLI). 2. B.E. (Elect. & Comm.)-4-year course offered by various Engineering Colleges. efforts have been made to cover the papers: Electronics-I & II and Pulse and Digital Circuits. 3. B.Sc. (Elect.)-3-Year vocationalised

course recently introduced by Approach.  
Handbook of Systems Engineering and Risk Management in Control Systems, Communication, Space Technology, Missile, Security and Defense Operations - Anna M. Doro-on 2022-09-27

This book provides multifaceted components and full practical perspectives of systems engineering and risk management in security and defense operations with a focus on infrastructure and manpower control systems, missile design, space technology, satellites, intercontinental ballistic missiles, and space security. While there are many existing selections of systems engineering and risk management textbooks, there is no existing work that connects systems engineering and risk management concepts to solidify its usability in the entire security and defense actions. With this book Dr. Anna M. Doro-on rectifies the current imbalance. She provides a comprehensive overview of systems engineering and risk

management before moving to deeper practical engineering principles integrated with newly developed concepts and examples based on industry and government methodologies. The chapters also cover related points including design principles for defeating and deactivating improvised explosive devices and land mines and security measures against kinds of threats. The book is designed for systems engineers in practice, political risk professionals, managers, policy makers, engineers in other engineering fields, scientists, decision makers in industry and government and to serve as a reference work in systems engineering and risk management courses with focus on security and defense operations.

Wireless Communication - Mainak Chowdhury 2017-01-16

This book provides extensive coverage of fundamental concepts of wireless communication, including coverage of recent developments and applications in wireless

systems.

**Digital Communications** - Bernard Sklar

2016-12-23

The clear, easy-to-understand introduction to digital communications Completely updated coverage of today's most critical technologies Step-by-step implementation coverage Trellis-coded modulation, fading channels, Reed-Solomon codes, encryption, and more Exclusive coverage of maximizing performance with advanced "turbo codes" "This is a remarkably comprehensive treatment of the field, covering in considerable detail modulation, coding (both source and channel), encryption, multiple access and spread spectrum. It can serve both as an excellent introduction for the graduate student with some background in probability theory or as a valuable reference for the practicing communication system engineer. For both communities, the treatment is clear and well presented." - Andrew Viterbi, The Viterbi Group Master every key digital communications

technology, concept, and technique. Digital Communications, Second Edition is a thoroughly revised and updated edition of the field's classic, best-selling introduction. With remarkable clarity, Dr. Bernard Sklar introduces every digital communication technology at the heart of today's wireless and Internet revolutions, providing a unified structure and context for understanding them -- all without sacrificing mathematical precision. Sklar begins by introducing the fundamentals of signals, spectra, formatting, and baseband transmission. Next, he presents practical coverage of virtually every contemporary modulation, coding, and signal processing technique, with numeric examples and step-by-step implementation guidance. Coverage includes: Signals and processing steps: from information source through transmitter, channel, receiver, and information sink Key tradeoffs: signal-to-noise ratios, probability of error, and bandwidth expenditure Trellis-coded modulation and Reed-Solomon

codes: what's behind the math Synchronization and spread spectrum solutions Fading channels: causes, effects, and techniques for withstanding fading The first complete how-to guide to turbo codes: squeezing maximum performance out of digital connections Implementing encryption with PGP, the de facto industry standard Whether you're building wireless systems, xDSL, fiber or coax-based services, satellite networks, or Internet infrastructure, Sklar presents the theory and the practical implementation details you need. With nearly 500 illustrations and 300 problems and exercises, there's never been a faster way to master advanced digital communications. CD-ROM INCLUDED The CD-ROM contains a complete educational version of Elanix' SystemView DSP design software, as well as detailed notes for getting started, a comprehensive DSP tutorial, and over 50 additional communications exercises. Principles of Communications - Rodger E. Ziemer 1976

*Digital Communications* - Dr. J. S. Chitode  
2020-12-01

There are eight chapters, useful appendix and solved question papers in the book. Basic digital communication, line codes and sampling methods are presented at the beginning. Digital pulse modulation techniques such as PCM, DPCM, DM, ADM are presented. Continuous wave digital modulation methods such as BPSK, DPSK, QPSK, QAM, BFSK and OOK are presented with mathematical analysis of modulators and receivers. Issues related to baseband transmission such as ISI, Nyquist pulse shaping criterion, optimum reception, matched filter and eye patterns are also discussed. Concepts of information theory such as discrete memoryless channels, mutual information, Shannon's theorems on source coding are also presented. Coding using linear block codes, cyclic codes and convolutional coding is also discussed. Secured communication using spread spectrum

modulation is also discussed in detail.

**Numerical Techniques** - Dr. J. S. Chitode

2021-01-01

The book comprises of various numerical methods and their implementation with C-language and MATLAB. Basics of C-programming are covered in first chapter. Basics of errors in computation, number representation and its impact on errors is covered in second chapter. Various types of errors, their propagation, analysis and estimation is also covered in this chapter. Roots of transcendental equations are covered in third chapter. Birge-vieta method, Bairstow method, Bisection method, Secant method, Regula Falsi, Newton Raphson methods are discussed in detail. Fourth chapter focuses mainly on solution of simultaneous linear equations. Graphical, matrix inversion, substitution, Gauss' elimination, Gauss Jordan, LU decomposition, Gauss Seidel methods are discussed with the help of numerical examples. Curve fitting is discussed in fifth

chapter. Finite differences operators, finite differences, Newton's forward and backward difference interpolation, divided differences interpolation, Lagrange's interpolation, inverse interpolation, least squares approximation are presented. Numerical differentiation and integration is given in sixth and seventh chapter. Simpson's and trapezoidal rules of integration are presented. Solution of ordinary differential equations is given in eighth chapter. Taylor series, Picard's methods, Euler's RK methods, Predictor corrector methods, boundary value problems and eigen value problems are also presented. Last chapter deals with unconstrained and constrained optimization. All the methods are implemented using C-program and some of them with MATLAB. Large number of solved and unsolved examples are also given. *Fundamentals of Signals and Systems* - Benoit Boulet 2006

This book is a self-contained introduction to the theory of signals and systems, which lies at the

basis of many areas of electrical and computer engineering. In the seventy short lectures, formatted to facilitate self-learning and to provide easy reference, the book covers such topics as linear time-invariant (LTI) systems, the Fourier transform, the Laplace Transform and its application to LTI differential systems, state-space systems, the z-transform, signal analysis using MATLAB, and the application of transform techniques to communication systems. A wide array of technologies, including feedback control, analog and discrete-time filters, modulation, and sampling systems are discussed in connection with their basis in signals and systems theory. The accompanying CD-ROM includes applets, source code, sample examinations, and exercises with selected solutions.

*Communication Systems - I* - Dr. J. S. Chitode  
2020-12-01

Analysis tools such as Fourier series, Fourier transforms signals, systems and spectral

densities are discussed in the second chapter. Introduction is presented in the first chapter. Third chapter presents additional analysis techniques such as probability, random variables, distribution functions and density functions. Probability models and random processes are also discussed. Noise representation, sources, noise factor, noise temperature, filtering of noise, noise bandwidth and performance of AM/FM in presence of noise is discussed in fourth chapter. Analog pulse modulation is presented in fifth chapter. Sampling, PAM, PAM/TDM are discussed in this chapter. Sixth chapter deals with digital pulse modulation methods such as PCM, DM, ADM and DPCM. Seventh chapter presents digital multiplexers, line coding, synchronization, scramblers, ISI, eye patterns and equalization techniques. Digital modulation is presented in eighth chapter. Phase shift keying, frequency shift keying, QPSK, QAM and MSK are presented. Last chapter deals with error

performance of these techniques using matched filter.

**Power Electronics** - Dr. J. S. Chitode

2020-12-01

Power semiconductor devices are discussed in first chapter. SCR, GTO, LASCOR, RCT, MCT, characteristics, rating turn-off and turn-on is presented. Power BJT, MOSFET, IGBT, driving circuits, protection and snubber circuits are also discussed. Commutation circuits and series and parallel operation are presented. Single and three phase controlled converters are given in second chapter. Half wave, full wave, midpoint, semiconverters, full converters, dual converters and effect of source inductance is also given. Operation with resistive and inductive load is discussed. Third chapter presents AC voltage controllers and cycloconverters. On-off control, phase control, triac based controllers are given. Cycloconverters and operations with inductive as well as resistive load are discussed. Choppers are given in fourth chapter. Step down, step up,

voltage, current and load commutated choppers are given. Classification is also discussed. Last chapter presents inverters. Half bridge, full bridge, quasi square wave, push-pull, thyristorized inverters with resistive and inductive loads are given. Switching techniques for PWM inverters are also given.

**A Textbook of Applied Electronics** - RS Sedha  
2008-02

The present book has been thoroughly revised and lot of useful material has been added .several photographs of electronic devices and their specifications sheets have been included.This will help the students to have a better understanding of the electronic devices and circuits from application point of view.the mistake and misprints,which has crept in,have been eliminated in this edition.

Communication Systems - II - Dr. J. S. Chitode  
2020-12-01

Introduction in first chapter includes various topics given in the book. Second chapter deals

with information theory that includes modes of sources and channels, information and entropy, source coding, discrete memoryless channels, mutual information and Shannon's theorems are given. Linear block codes, cyclic codes, Hamming codes, syndrome decoding, convolutional codes are given in third chapter. Spread spectrum communication includes pseudo noise sequences, direct sequence and frequency hop spread spectrum. It is presented in fourth chapter. Multiple access techniques are reviewed in fifth chapter. Sixth chapter deals with satellite communications. Satellite orbits, satellite access, earth station, transponder, frequency reuse, link budget, VSAT and MSAT are presented. Fibre optic communication is introduced in seventh chapter. Light propagation in fiber, losses, modes, dispersion, light sources and detectors, fiber optic link are presented in this chapter.

### **Information Theory Meets Power Laws -**

Lukasz Debowski 2020-12-10

Discover new theoretical connections between stochastic phenomena and the structure of natural language with this powerful volume! Information Theory Meets Power Laws: Stochastic Processes and Language Models presents readers with a novel subtype of a probabilistic approach to language, which is based on statistical laws of texts and their analysis by means of information theory. The distinguished author insightfully and rigorously examines the linguistic and mathematical subject matter while eschewing needlessly abstract and superfluous constructions. The book begins with a less formal treatment of its subjects in the first chapter, introducing its concepts to readers without mathematical training and allowing those unfamiliar with linguistics to learn the book's motivations. Despite its inherent complexity, Information Theory Meets Power Laws: Stochastic Processes and Language Models is a surprisingly approachable treatment of idealized



mathematical models of human language. The author succeeds in developing some of the theory underlying fundamental stochastic and semantic phenomena, like strong nonergodicity, in a way that has not previously been seriously attempted. In doing so, he covers topics including: Zipf's and Herdan's laws for natural language Power laws for information, repetitions, and correlations Markov, finite-state, and Santa Fe processes Bayesian and frequentist interpretations of probability Ergodic decomposition, Kolmogorov complexity, and universal coding Theorems about facts and words Information measures for fields Rényi entropies, recurrence times, and subword complexity Asymptotically mean stationary processes Written primarily for mathematics graduate students and professionals interested in information theory or discrete stochastic processes, Information Theory Meets Power Laws: Stochastic Processes and Language Models also belongs on the bookshelves of

doctoral students and researchers in artificial intelligence, computational and quantitative linguistics as well as physics of complex systems.

**Analog and Digital Communication** - J. S. Chitode 2009

Amplitude Modulation : Transmission and Reception Principles of amplitude modulation - AM envelope, Frequency spectrum and bandwidth, Modulation index and Percent modulation, AM power distribution, AM modulator circuits- low-level AM modulator, Medium power AM modulator, AM transmitters- Low-level transmitters, High level transmitters, receiver parameters, AM reception - AM receivers - TRF, Super heterodyne receiver, Double conversion AM receivers. Angle Modulation : Transmission and Reception Angle modulation - FM and PM waveforms, Phase deviation and Modulation index, Frequency deviation, Phase and Frequency modulators and demodulators, Frequency spectrum of Angle - Modulated waves. Bandwidth requirements of

Angle modulated waves, Commercial Broadcast band FM, Average power of an angle modulated wave, Frequency and Phase modulators, A direct FM transmitters, Indirect transmitters, Angle modulation Vs Amplitude modulation, FM receivers : FM demodulators, PLL FM demodulators, FM noise suppression, Frequency versus Phase modulation. Digital Transmission and Data Communication Introduction, Pulse modulation, PCM - PCM sampling, Sampling rate, Signal to quantization noise rate, Companding - Analog and Digital - Percentage error, Delta modulation, Adaptive delta modulation, Differential pulse code modulation, Pulse transmission - ISI, Eye pattern, Data communication history, Standards, Data communication circuits, Data communication codes, Error control, Hardware, Serial and Parallel interfaces, Data modems, - Asynchronous modem, Synchronous modem, Low-speed modem, Medium and High speed modem, Modem control. Digital Communication

Introduction, Shannon limit for information capacity, Digital amplitude modulation, Frequency shift keying, FSK bit rate and baud, FSK transmitter, BW consideration of FSK, FSK receiver, Phase shift keying - Binary phase shift keying - QPSK, Quadrature Amplitude modulation, Bandwidth efficiency, Carrier recovery - Squaring loop, Costas loop, DPSK. Spread Spectrum and Multiple Access Techniques Introduction, Pseudo-noise sequence, DS spread spectrum with coherent binary PSK, Processing gain, FH spread spectrum, Multiple access techniques - Wireless communication, TDMA and FDMA, Wireless communication systems, Source coding of speech for wireless communications.

**SIGNALS AND SYSTEMS** - A. ANAND KUMAR  
2012-02-04

This comprehensive text on control systems is designed for undergraduate students pursuing courses in electronics and communication engineering, electrical and electronics

engineering, telecommunication engineering, electronics and instrumentation engineering, mechanical engineering, and biomedical engineering. Appropriate for self-study, the book will also be useful for AMIE and IETE students. Written in a student-friendly readable manner, the book explains the basic fundamentals and concepts of control systems in a clearly understandable form. It is a balanced survey of theory aimed to provide the students with an in-depth insight into system behaviour and control of continuous-time control systems. All the solved and unsolved problems in this book are classroom tested, designed to illustrate the topics in a clear and thorough way. **KEY FEATURES :** Includes several fully worked-out examples to help students master the concepts involved. Provides short questions with answers at the end of each chapter to help students prepare for exams confidently. Offers fill in the blanks and objective type questions with answers at the end of each chapter to quiz

students on key learning points. Gives chapter-end review questions and problems to assist students in reinforcing their knowledge.

**Probability and Statistics** - Dr. J. S. Chitode  
2021-01-01

First chapter deals with probability and random variable discussion. CDF, PDF and two dimensional random variables are discussed. Second chapter presents various useful probability distribution models. It also presents useful statistical averages such as mean, moments, variance, etc. Third chapter presents basic statistics concepts. Mean, median, mode, moments, variance, Kurtosis, skewness are discussed. Correlation, regression, Chebyshev inequality are also presented. Fourth chapter discusses formation of hypothesis, tests of significance and chi-square distribution. Last chapter presents curve fitting using straight line and second degree parabola.

Handbook of Filter Synthesis - Anatol I. Zverev  
1967-01-15

Handbook of Filter Synthesis, originally published in 1967 is the classic reference for continuous time filter design. The plots of filter behaviour for different designs, such as ripple and group delay, make this book invaluable. The discussion of how to synthesize a bandpass, bandpass, or bandstop filter from a lowpass prototype is also very useful.

*Signals and Systems* - Dr. J. S. Chitode  
2021-01-01

Analysis of signals is given in first chapter. Types of signals, properties of systems are also presented. Second chapter presents Fourier series analysis. Its properties are also discussed. Fourier transform is given in third chapter, along with its properties. The transmission of signals through linear systems is given in fourth chapter. Realizability and distortion less transmission is also discussed. Fifth chapter discusses, convolution, its properties and impulse response properties of LTI systems. Causality and stability are discussed.

Autocorrelation and cross correlation is also given. Energy spectral density and power spectral density along with their properties are also given. Sampling principles and types are given in sixth chapter. Chapter seventh and eighth presents Laplace transforms and z-transforms in detail. Their properties, inversion and applications to LTI systems are analyzed in detail. Relationships among transforms are also given. All the concepts are supported with lot of solved examples.

**Linear Integrated Circuits** - D Choudhury Roy  
2003

Designed Primarily For Courses In Operational Amplifier And Linear Integrated Circuits For Electrical, Electronic, Instrumentation And Computer Engineering And Applied Science Students. Includes Detailed Coverage Of Fabrication Technology Of Integrated Circuits. Basic Principles Of Operational Amplifier, Internal Construction And Applications Have Been Discussed. Important Linear Ics Such As

555 Timer, 565 Phase-Locked Loop, Linear Voltage Regulator Ics 78/79 Xx And 723 Series D-A And A-D Converters Have Been Discussed In Individual Chapters. Each Topic Is Covered In Depth. Large Number Of Solved Problems, Review Questions And Experiments Are Given With Each Chapter For Better Understanding Of Text. Salient Features Of Second Edition \* Additional Information Provided Wherever Necessary To Improve The Understanding Of Linear Ics. \* Chapter 2 Has Been Thoroughly Revised. \* Dc & Ac Analysis Of Differential Amplifier Has Been Discussed In Detail. \* The Section On Current Mirrors Has Been Thoroughly Updated. \* More Solved Examples, Pspice Programs And Answers To Selected Problems Have Been Added.

Signals & Systems - Alan V. Oppenheim 1997

This authoritative book, highly regarded for its intellectual quality and contributions provides a solid foundation and life-long reference for anyone studying the most important methods of

modern signal and system analysis. The major changes of the revision are reorganization of chapter material and the addition of a much wider range of difficulties.

A Textbook Of Digital Signal Processing - R. S. Kaler 2009-01-01

This book presents theoretical and application topics in digital signal processing (DSP). The topics here comprise clever DSP tricks of the trade not covered in traditional DSP textbooks. Here we go beyond the standard DSP fundamentals textbook and present new, but tried-n-true, clever implementations of digital filter design, spectrum analysis, signal generation, high-speed function approximation and various other DSP functions. With this book we wished to create a resource that is relevant to the needs of the working DSP engineer by helping bridge the theory-to-practice gap between introductory DSP textbooks and the esoteric, difficult to understand, academic journals. This book will be useful to experienced

DSP engineers, due to its gentle tutorial style it will also be of considerable value to the DSP beginner. The mathematics used herein is simple algebra and the arithmetic of complex numbers, making this material accessible to a wide engineering and scientific audience. Fortunately, the chapter topics in this book are written in a standalone manner, so the subject matter can be read in any desired order.

### **DIGITAL SIGNAL PROCESSING - B.**

SOMANATHAN NAIR 2004-01-01

This textbook for a one-semester course in Digital Signal Processing and Filter Design is suitable for undergraduate students of Electrical and Electronics Engineering, Electronics and Instrumentation Engineering, Instrumentation and Control Engineering, Electronics and Communication Engineering, Computer Science and Engineering, and Information Technology. Besides, it will also be a useful text for students pursuing applied sciences degree courses in Electronics, Computer Science, Computer

Applications, and Information Technology. Though DSP is often treated as a complicated theoretical subject, this book through several worked examples strives to provide a motivating introduction to fundamental concepts, principles and applications of DSP. Building on the basic theory of DSP, the transformations techniques of signals such as Discrete-Time Fourier Transform (DTFT), Discrete Fourier Transform (DFT), Fast-Fourier Transform (FFT), and z-transform are discussed in detail. Several chapters are devoted to design and practical implementation schemes of analog and digital filters. The design of IIR filters using the Butterworth, Chebyshev, and Inverse Chebyshev approximations is illustrated. The design of FIR filters based on the Fourier-series and frequency-sampling methods, is discussed. Owing to their importance in DSP, the differential and difference equations are discussed in the penultimate chapter. The final chapter describes some of the practical applications of DSP.

*Analog Communication* - Uday A. Bakshi 2009  
Communication / Pulse Modulation Block  
schematic of Communication System, Base Band  
Signals and their bandwidth requirements, RF  
Bands, Types and Communication Channels  
(Transmission Lines, Parallel Wires, Co-axial  
Cables, Waveguides and Optical Fiber).  
Necessity of Modulation, Types of Modulation :  
AM, FM, PM and Pulse Modulation. Block  
schematic of PAM, PWM, PPM. Multiplexing :  
TDM, FDM. Amplitude Modulation Mathematical  
treatment and expression for AM, Frequency  
Spectrum, Modulation Index, Power Relation as  
applied to Sinusoidal Signals, Representation of  
AM wave, Mathematical treatment as applied to  
general signals in Communication, Generation of  
AM using non-linear property. Types of AM  
Transmitters DSB-FC, DSB-SC, SSB, ISB & VSB,  
their generation methods and Comparison in  
terms of Bandwidth and Transmission Power  
requirements & Complexity (Block diagram  
treatment only) Angle Modulation Mathematical

analysis of FM and PM using Sinusoidal Signals,  
Frequency spectrum, Mathematical treatment as  
applied to general non-sinusoidal Signals,  
Modulation index, Bandwidth requirements (all  
three relations). Narrowband and Wideband FM,  
Comparison of FM and PM, Direct and Indirect  
methods of FM generation, Need for Pre-  
emphasis, Comparison of AM and FM. AM & FM  
Receivers Block diagram of AM and FM  
receivers, Superheterodyne Receiver,  
Performance characteristics : Sensitivity,  
Selectivity, Fidelity, Image Frequency Rejection,  
IFRR, Tracking, De-emphasis, Mixers. AM  
Detection Envelope detection, Synchronous  
detection, Practical diode detection, AGC. SSB  
and DSB detection methods. FM Detection Phase  
discrimination and Ratio Detector, Mathematical  
analysis of FM Detection. Noise Sources of Noise,  
Types of Noise, White Noise, SNR, Noise Figure,  
Noise Temperature, Friis formula for Noise  
Figure, Noise Bandwidth, Performance of AM  
(DSB, SSB & VSB) and FM in presence of Noise :

Mathematical treatment Radiation and Propagation Concept of Radiation, Basic Antenna System (Dipole), Antenna parameters, Yagi Antenna. Mechanism of Propagation : Ground Wave, Sky Wave, Space Wave, Duct, Tropospheric Scatter and Extraterrestrial Propagation. Concept of Fading and diversity reception.

*DIGITAL SIGNAL PROCESSING* - A. ANAND KUMAR 2014-12-15

The second edition of this well received text continues to provide coherent and comprehensive coverage of digital signal processing. It is designed for undergraduate students of Electronics and Communication engineering, Telecommunication engineering, Electronics and Instrumentation engineering, Electrical and Electronics engineering, Electronics and Computers engineering, Biomedical engineering and Medical Electronics engineering. This book will also be useful to AMIE and IETE students. Written with student-

centred, pedagogically-driven approach, the text provides a self-contained introduction to the theory of digital signal processing. It covers topics ranging from basic discrete-time signals and systems, discrete convolution and correlation, Z-transform and its applications, realization of discrete-time systems, discrete-time Fourier transform, discrete Fourier series, discrete Fourier transform to fast Fourier transform. In addition to this, various design techniques for design of IIR and FIR filters are discussed. Multi-rate digital signal processing and introduction to digital signal processors and finite word length effects on digital filters are also covered. All the solved and unsolved problems in this book are designed to illustrate the topics in a clear way. MATLAB programs and the results for typical examples are also included at the end of chapters for the benefit of the students. New to This Edition A chapter on Finite Word Length Effects in Digital Filters Key Features • Numerous worked-out examples in



each chapter • Short questions with answers help students to prepare for examinations and interviews • Fill in the blanks, review questions, objective type questions and unsolved problems at the end of each chapter to test the level of understanding of the subject

Information Theory and Coding - Dr. J. S.

Chitode 2021-01-01

Various measures of information are discussed in first chapter. Information rate, entropy and mark off models are presented. Second and third chapter deals with source coding. Shannon's encoding algorithm, discrete communication channels, mutual information, Shannon's first theorem are also presented. Huffman coding and Shannon-Fano coding is also discussed.

Continuous channels are discussed in fourth chapter. Channel coding theorem and channel capacity theorems are also presented. Block codes are discussed in chapter fifth, sixth and seventh. Linear block codes, Hamming codes, syndrome decoding is presented in detail.

Structure and properties of cyclic codes, encoding and syndrome decoding for cyclic codes is also discussed. Additional cyclic codes such as RS codes, Golay codes, burst error correction is also discussed. Last chapter presents convolutional codes. Time domain, transform domain approach, code tree, code trellis, state diagram, Viterbi decoding is discussed in detail.

**Communication Theory** - Dr. J. S. Chitode  
2021-01-01

Amplitude modulation and Angle modulation are discussed in first two chapters. AM, FM, analysis equations, modulators, detectors, transmission and reception are thoroughly presented. SSB, DSB, VSB, FDM are also discussed. Noise theory is given in third chapter. It includes random variables, probability, random processes and correlation functions. Noise factor, noise temperature and mathematical analysis of noise is presented. Performance of modulation systems in the presence of noise is explained in

fourth chapter. Figure of merit, capture effect and threshold effect are also presented. Last chapter presents information theory. Entropy information rate, discrete memoryless source, source coding, Shannon's theorems are also given in detail. Mutual information and channel capacity are also presented.

**Digital Signal Processing** - Andreas Antoniou  
2005-10-10

An up-to-the-minute textbook for junior/senior level signal processing courses and senior/graduate level digital filter design courses, this text is supported by a DSP software package known as D-Filter which would enable students to interactively learn the fundamentals of DSP and digital-filter design. The book includes a free license to D-Filter which will enable the owner of the book to download and install the most recent version of the software as well as future updates.

Communication Engineering - Chitode J. S. 2009  
Modulation Systems Time and frequency domain

representation of signals, Amplitude modulation and demodulation, Frequency modulation and demodulation, Super heterodyne radio receiver. Frequency division multiplexing, Pulse width modulation. Transmission Medium Transmission lines - Types, Equivalent circuit, Losses, Standing waves, Impedance matching, Bandwidth: Radio propagation - Ground wave and space wave propagation, Critical frequency maximum usable frequency, Path loss, White Gaussian noise. Digital Communication Pulse code modulation, Time division multiplexing, Digital T-carrier system. Digital radio system. Digital modulation: Frequency and phase shift keying - Modulator and demodulator, Bit error rate calculation. Data Communication and Network Protocol Data communication codes, Error control, Serial and parallel interface, Telephone network, Data modem, ISDN. LAN. ISO-OSI seven layer architecture for WAN. Satellite and Optical Fibre Communications Orbital satellites, Geostationary

satellites, Look angles, Satellite system link models, satellite system link equations: advantages of optical fibre communication - Light propagation through fibre, Fibre loss, Light sources and detectors.

**Solutions Manual to Accompany Digital Communications** - Simon S. Haykin 1988

Communication Systems - II - Dr. J. S. Chitode  
2020-12-01

Introduction in first chapter includes various topics given in the book. Second chapter deals with information theory that includes modes of sources and channels, information and entropy, source coding, discrete memoryless channels, mutual information and Shannon's theorems are given. Linear block codes, cyclic codes, Hamming codes, syndrome decoding, convolutional codes are given in third chapter. Spread spectrum communication includes pseudo noise sequences, direct sequence and frequency hop spread spectrum. It is presented

in fourth chapter. Multiple access techniques are reviewed in fifth chapter. Sixth chapter deals with satellite communications. Satellite orbits, satellite access, earth station, transponder, frequency reuse, link budget, VSAT and MSAT are presented. Fibre optic communication is introduced in seventh chapter. Light propagation in fiber, losses, modes, dispersion, light sources and detectors, fiber optic link are presented in this chapter.

**Antennas and Wave Propagation** - A. R. Harish 2007

Aimed at a single-semester course on antennas at the undergraduate level, Antennas and Wave Propagation provides a lucid explanation of the fundamentals of antennas and propagation. This student-friendly text also includes simple design procedures along with a large number of examples and exercises.

**Analytical Modeling of Wireless Communication Systems** - Carla-Fabiana Chiasserini 2016-06-14

Wireless networks represent an inexpensive and convenient way to connect to the Internet. However, despite their applications across several technologies, one challenge still remains: to understand the behavior of wireless sensor networks and assess their performance in large-scale scenarios. When a large number of network nodes need to interact, developing suitable analytical models is essential to ensure the appropriate coverage and throughput of these networks and to enhance user mobility. This is intrinsically difficult due to the size and number of different network nodes and users. This book highlights some examples which show how this problem can be overcome with the use of different techniques. An intensive parameter analysis shows the reader how to exploit analytical models for an effective development and management of different types of wireless networks.

Electromagnetic Field Theory - Uday A. Bakshi  
2020-11-01

The comprehensive study of electric, magnetic and combined fields is nothing but electromagnetic engineering. Along with electronics, electromagnetics plays an important role in other branches. The book is structured to cover the key aspects of the course Electromagnetic Field Theory for undergraduate students. The knowledge of vector analysis is the base of electromagnetic engineering. Hence book starts with the discussion of vector analysis. Then it introduces the basic concepts of electrostatics such as Coulomb's law, electric field intensity due to various charge distributions, electric flux, electric flux density, Gauss's law, divergence and divergence theorem. The book continues to explain the concept of elementary work done, conservative property, electric potential and potential difference and the energy in the electrostatic fields. The detailed discussion of current density, continuity equation, boundary conditions and various types of capacitors is also included in the

book. The book provides the discussion of Poisson's and Laplace's equations and their use in variety of practical applications. The chapter on magnetostatics incorporates the explanation of Biot-Savart's law, Ampere's circuital law and its applications, concept of curl, Stoke's theorem, scalar and vector magnetic potentials. The book also includes the concept of force on a moving charge, force on differential current element and magnetic boundary conditions. The book covers all the details of Faraday's laws, time varying fields, Maxwell's equations and Poynting theorem. Finally, the book provides the detailed study of uniform plane waves including their propagation in free space, perfect dielectrics, lossy dielectrics and good conductors. The book uses plain, lucid language to explain each topic. The book provides the logical method of explaining the various complicated topics and stepwise methods to make the understanding easy. The variety of solved examples is the feature of this book which

helps to inculcate the knowledge of the electromagnetics in the students. Each chapter is well supported with necessary illustrations and self-explanatory diagrams. The book explains the philosophy of the subject which makes the understanding of the concepts very clear and makes the subject more interesting. *Communication Engineering Principles* - Ifiok Otung 2021-01-28

For those seeking a thorough grounding in modern communication engineering principles delivered with unrivaled clarity using an engineering-first approach *Communication Engineering Principles: 2nd Edition* provides readers with comprehensive background information and instruction in the rapidly expanding and growing field of communication engineering. This book is well-suited as a textbook in any of the following courses of study: Telecommunication Mobile Communication Satellite Communication Optical Communication Electronics Computer Systems Primarily

designed as a textbook for undergraduate programs, Communication Engineering Principles: 2nd Edition can also be highly valuable in a variety of MSc programs. Communication Engineering Principles grounds its readers in the core concepts and theory required for an in-depth understanding of the subject. It also covers many of the modern, practical techniques used in the field. Along with an overview of communication systems, the book covers topics like time and frequency domains analysis of signals and systems, transmission media, noise in communication systems, analogue and digital modulation, pulse shaping and detection, and many others.

*Principles Of Communication Systems -*  
HERBERT. TAUB 2007

### **SATELLITE COMMUNICATION - P.**

BANERJEE 2017-06-01

Designed as a text for the undergraduate students of Electronics and Communication

Engineering/Electronics and Telecommunication Engineering as well as for postgraduate students of Communication Systems/Electronics and Communication Engineering, the book presents all the topics related to satellite communication in an organised way, starting from the basic concepts to the latest advancements in the field. The book commences with an introductory chapter that familiarises the readers with the evolution of satellite communication. The following chapters expatiate on orbital mechanics, perturbation factors of the orbit and different orbit configurations. Next, the launching mechanism and satellite sub-systems, which together configure a complete satellite system, are focused. The book further explicates the link calculation to facilitate the design aspect. In addition, satellite access mechanism, and Internet linking via satellite are also outlined in the text. Finally, the concluding chapters of the book elaborate navigation satellite, direct broadcasting satellite television,

VSAT and special purpose satellites. With all the contents enriched by the vast experience of the author, the book provides a comprehensive treatment of the subject, and enables the students to rely upon this exclusive book only.

**KEY FEATURES** The presentation of every topic is kept simple and systematic to help students understand the complicated concepts easily. Annexures covering presentations of some additional relevant information are appended to most of the chapters. The book is rich in pedagogical features to the full, which include ample figures and tables, summary and review questions at the end of each chapter. Solved numerical problems are provided in between the text. Bibliography is given at the end of the book.

**Electrical Machines - II** - Uday A. Bakshi  
2020-11-01

The importance of various electrical machines is well known in the various engineering fields. The book provides comprehensive coverage of

the synchronous generators (alternators), synchronous motors, three phase and single phase induction motors and various special machines. The book is structured to cover the key aspects of the course Electrical Machines - II. The book starts with the explanation of basics of synchronous generators including construction, winding details and e.m.f. equation. The book then explains the concept of armature reaction, phasor diagrams, regulation and various methods of finding the regulation of alternator. Stepwise explanation and simple techniques used to elaborate these methods is the feature of this book. The book further explains the concept of synchronization of alternators, two reaction theory and parallel operation of alternators. The chapter on synchronous motor provides the detailed discussion of construction, working principle, behavior on load, analysis of phasor diagram, Vee and Inverted Vee curves, hunting and applications. The book further explains the three

phase induction motors in detail. It includes the construction, working, effect of slip, torque equation, torque ratios, torque-slip characteristics, losses, power flow, equivalent circuit, effect of harmonics on the performance and applications. This chapter includes the discussion of induction generator and synchronous induction motor. The detailed discussion of circle diagram is also included in the book. The book teaches the various starting methods, speed control methods and electrical braking methods of three phase induction motors. Finally, the book gives the explanation of various single phase induction motors and special machines such as reluctance motor, hysteresis motor, repulsion motor, servomotors and stepper motors. The discussion of magnetic levitation is also incorporated in the book. The book uses plain, lucid language to explain each topic. The book provides the logical method of explaining the various complicated topics and stepwise methods to make the understanding

easy. Each chapter is well supported with necessary illustrations, self explanatory diagrams and variety of solved problems. The book explains the philosophy of the subject which makes the understanding of the concepts very clear and makes the subject more interesting.

**Computational Science - ICCS 2019** - João M. F. Rodrigues 2019-06-07

The five-volume set LNCS 11536, 11537, 11538, 11539, and 11540 constitutes the proceedings of the 19th International Conference on Computational Science, ICCS 2019, held in Faro, Portugal, in June 2019. The total of 65 full papers and 168 workshop papers presented in this book set were carefully reviewed and selected from 573 submissions (228 submissions to the main track and 345 submissions to the workshops). The papers were organized in topical sections named: Part I: ICCS Main Track Part II: ICCS Main Track; Track of Advances in High-Performance Computational Earth



Sciences: Applications and Frameworks; Track of Agent-Based Simulations, Adaptive Algorithms and Solvers; Track of Applications of Matrix Methods in Artificial Intelligence and Machine Learning; Track of Architecture, Languages, Compilation and Hardware Support for Emerging and Heterogeneous Systems Part III: Track of Biomedical and Bioinformatics Challenges for Computer Science; Track of Classifier Learning from Difficult Data; Track of Computational Finance and Business Intelligence; Track of Computational Optimization, Modelling and Simulation; Track of Computational Science in IoT and Smart Systems Part IV: Track of Data-Driven Computational Sciences; Track of Machine Learning and Data Assimilation for Dynamical Systems; Track of Marine Computing in the Interconnected World for the Benefit of the Society; Track of Multiscale Modelling and Simulation; Track of Simulations of Flow and Transport: Modeling, Algorithms and

Computation Part V: Track of Smart Systems: Computer Vision, Sensor Networks and Machine Learning; Track of Solving Problems with Uncertainties; Track of Teaching Computational Science; Poster Track ICCS 2019 Chapter “Comparing Domain-decomposition Methods for the Parallelization of Distributed Land Surface Models” is available open access under a Creative Commons Attribution 4.0 International License via [link.springer.com](http://link.springer.com).

**Principles of Communication** - J. S. Chitode 2009

Communication process, Source of information, Communication channels, Base-band and Pass-band signals, Representation of signal and systems, The modulation process, Primary communication resources, Analog versus digital communications. Amplitude modulation Frequency division and time division multiplexing, Suppressed carrier systems, Single side band transmission, Amplitude modulation with carrier power, Effect of frequency and

phase errors in synchronous detection, Comparison of various AM systems, Vestigial side band transmission. Angle Modulation Narrow and wide band FM, Multiple frequency and square wave modulation, Linear and Non-linear modulation, Phase modulation, Demodulation of FM signals, Noise reduction. Pulse Modulation Pulse amplitude modulation, Other forms of pulse modulation, Bandwidth required for transmission PAM signals, Comparison of frequency division and Time division multiplexed systems. Noise Different types of noise, Noise calculations, Equivalent noise bandwidth, Noise figures, Effective noise temperature, Noise figure in cascaded stages. Performance of Communication Systems Noise calculation in communication systems, Noise in amplitude modulated, angle modulated and pulse modulated systems, Comparison of coded and un-coded systems. Information Transmission Measures of information, Channel capacity, transmission of continuous signals,

Exchange of bandwidth for signal to noise ratio, Efficiency of PCM systems.

**Signals & System Analysis** - Dr. J. S. Chitode  
2020-11-01

The book is written for an undergraduate course on the Signals and Systems. It provides comprehensive explanation of continuous time signals and systems, analogous systems, Fourier transform, Laplace transform, state variable analysis and z-transform analysis of systems. The book starts with the various types of signals and operations on signals. It explains the classification of continuous time signals and systems. Then it includes the discussion of analogous systems. The book provides detailed discussion of Fourier transform representation, properties of Fourier transform and its applications to network analysis. The book also covers the Laplace transform, its properties and network analysis using Laplace transform with and without initial conditions. The book provides the detailed explanation of modern approach of

system analysis called the state variable analysis. It includes various methods of state space representation of systems, finding the state transition matrix and solution of state equation. The discussion of network topology is also included in the book. The chapter on z-transform includes the properties of ROC, properties of z-transform, inverse z-transform, z-transform analysis of LTI systems and pulse transfer function. The state space representation of discrete systems is also incorporated in the

book. The book uses plain, simple and lucid language to explain each topic. The book provides the logical method of explaining the various complicated topics and stepwise methods to make the understanding easy. The variety of solved examples is the feature of this book. The book explains the philosophy of the subject which makes the understanding of the concepts very clear and makes the subject more interesting.