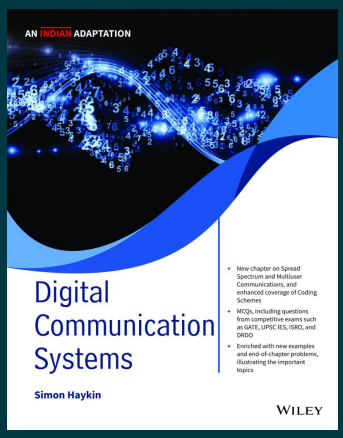

Digital Communication Systems, An Indian Adaptation

By Simon Haykin

Paperback 9789354242465 ₹1,099.00

Pages: 652

Description

Digital Communication Systems is a comprehensive textbook, focusing on the core principles of digital communications and relating theory to practice. Starting with the background of Fourier analysis, probability theory, and stochastic processes to analyze random signals, the book covers sampling theory, pulse-amplitude modulation, pulse-code modulation, delta modulation, matched filter, intersymbol interference, and adaptive equalization. It then discusses passband digital modulation techniques such as ASK, PSK, FSK, and QAM, followed by multiple access techniques such as FDMA, TDMA, and CDMA. Lastly, it discourses on information theory in detail and various coding schemes to control the occurrences of errors in communication systems.

About the Author

Simon Haykin

Simon Haykin is a University Professor at McMaster University, Hamilton, Ontario, Canada. His research interests include nonlinear dynamics, neural networks and adaptive filters and their applications in radar and communications systems. Dr. Haykin is the editor for a series of books on "Adaptive and Learning Systems for Signal Processing, Communications and Control" published by John Wiley & Sons

Table of Contents

Chapter 1: Introduction

1. Historical Background
2. The Communication Process
3. Modes of Communication
4. Need of Modulation
5. Types of Modulation
6. Digital versus Analog Communication
7. Multiple-Access Techniques
8. Networks
9. Digital Communication
10. Self-Sustainable Modern Communication
11. Organization of the Book

Chapter 2: Frequency Analysis And Transmission Of Signals

1. Introduction
2. Representation of a Signal
3. The Fourier Series

4. The Fourier Transform
5. The Inverse Relationship between Time-Domain and Frequency-Domain Representations
6. The Dirac Delta Function
7. Fourier Transforms of Periodic Signals
8. Correlation of Signals
9. Transmission of Signals through Linear Time-Invariant Systems
10. Ideal Filters
11. Hilbert Transform
12. Pre-Envelopes
13. Complex Envelopes of Band-Pass Signals
14. Canonical Representation of Band-Pass Signals
15. Complex Low-Pass Representations of Band-Pass Systems
16. Putting the Complex Representations of Band-Pass Signals and Systems All Together
17. Linear Modulation Theory
18. Superheterodyne Receiver
19. Phase and Group Delays
20. Exponential (or Angle) Modulation
21. Summary and Discussion

Chapter 3: Probability Theory And Random Variables

1. Introduction
2. Set Theory
3. Probability Theory
4. Random Variables
5. Distribution Functions
6. The Concept of Expectation
7. Second-Order Statistical Averages
8. The Gaussian Distribution
9. The Central Limit Theorem
10. Functions of One Random Variable
11. Functions of Two Random Variables
12. Bayesian Inference
13. Parameter Estimation
14. Hypothesis Testing
15. Composite Hypothesis Testing
16. Summary and Discussion

Chapter 4: Stochastic Processes

1. Introduction
2. Mathematical Definition of a Stochastic Process
3. Two Classes of Stochastic Processes: Strictly Stationary and Weakly Stationary
4. Mean, Correlation

To purchase this product, please visit:
https://www.wileyindia.com/digital-communication-systems-an-indian-adaptation.html

Scan to buy