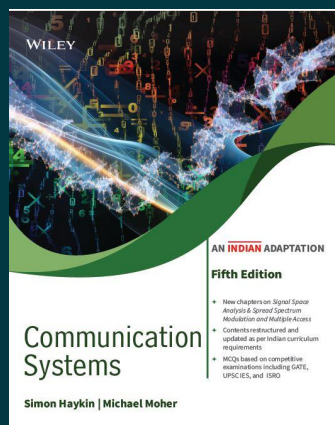




Communication Systems, 5ed, An Indian Adaptation

By Simon Haykin, Michael Moher, Ajay Singh Raghuvanshi, Shweta Shah

Paperback

9789354640896

₹1,050.00

Pages: 608

Description

This best-selling Communication Systems textbook continues to include the most comprehensive and rigorous coverage of both analog and digital communications. In addition to being the most up-to-date communications text available, the book lays an emphasis on the statistical underpinnings of communication theory with applications. The book presents material in a logical manner, and is illustrated with numerous examples, with the overall aim being that of helping the student develop an intuitive grasp of the theory under discussion.

Table of Contents

Chapter 1 Prologue

- 1.1 The Communication Process
- 1.2 Analog and Digital Types of Communication
- 1.3 Modulation Process
- 1.4 The Layered Approach
- 1.5 Shannon's Information Capacity Theorem
- 1.6 A Digital Communication Problem
- 1.7 Theme Example—Wireless Communications

Chapter 2 Fourier Representation of Communication Signals and Systems

- 2.1 Introduction
- 2.2 Introduction to Fourier Series and Discrete Spectrum
- 2.3 The Fourier Transform and Continuous Spectrum
- 2.4 Properties of the Fourier Transform
- 2.5 The Inverse Relationship Between Time and Frequency
- 2.6 Dirac Delta Function
- 2.7 Fourier Transforms of Periodic Signals
- 2.8 Transmission of Signals Through Linear Systems
- 2.9 Filters
- 2.10 Low-Pass and Band-Pass Signals
- 2.11 Band-Pass Systems
- 2.12 Phase and Group Delay

2.13 Sources of Information

2.14 Numerical Computation of the Fourier Transform

2.15 Theme Example—Channel Estimation of a Wireless LAN Channel

2.16 Summary and Discussion

Chapter 3 Amplitude Modulation

3.1 Introduction

3.2 Amplitude Modulation

3.3 Double Sideband–Suppressed Carrier Modulation

3.4 Quadrature-Carrier Multiplexing

3.5 Single Sideband and Vestigial Sideband Methods of Modulation

3.6 Theme Example—VSB Transmission of Analog and Digital Television

3.7 Frequency Translation

3.8 Frequency-Division Multiplexing

3.9 The Superheterodyne Receiver

3.10 Practical AM Communication Systems

3.11 AM Broadcasting and Broadcasting Standards for India

3.12 Summary and Discussion

Chapter 4 Phase and Frequency Modulation

4.1 Introduction

4.2 Basic Definitions

4.3 Frequency Modulation

4.4 Generation of FM Signals

4.5 Demodulation of FM Signals

4.6 Phase-Locked Loop

4.7 Nonlinear Effects in FM Systems

4.8 Practical FM Communication Systems

4.9 FM Broadcasting and Broadcasting Standards for India

4.10 Theme Example—Analog and Digital FM Cellular Telephones

4.11 Summary and Discussion

Chapter 5 Random Variables and Processes

5.1 Introduction

5.2 Probability

5.3 Random Variables

5.4 Statistical Averages

5.5 Random Processes

5.6 Stationary Random Processes

5.7 Mean, Correlation, and Covariance Functions

5.8 Ergodic Processes

5.9 Transmission of a Random Process Through a Linear Filter

5.10 Power Spectral Density

5.11 Gaussian Process

5.12 Theme Example—Stochastic Model of a Mobile Radio Channel

5.13 Summary and Discussion

Chapter 6 Noise in Communication Systems

6.1 Introduction

6.2 Noise

6.3 Narrow-Band Noise

6.4 Receiver Model

6.5 Noise in DSB-SC Receivers

6.6 Noise in AM Receivers

6.7 Noise in FM Receivers

6.8 Pre-emphasis and De-emphasis in FM

6.9 Theme Example—Link Budget of FM Satellite Link

6.10 Summary and Discussion

Chapter 7 Digital Representation of Analog Signals

7.1 Introduction

7.2 Why Digitize Analog Sources?

7.3 The Sampling Process

7.4 Pulse Modulation Techniques

7.5 Bandwidth-Noise Trade-Off

7.6 Time-Division Multiplexing

7.7 Theme Example—PPM in Impulse Radio

7.8 The Quantization Process

7.9 Pulse-Code Modulation

7.10 Delta Modulation

7.11 Linear Prediction

7.12 Differential Pulse-Code Modulation

7.13 Adaptive Differential Pulse-Code Modulation

7.14 MPEG Audio Coding Standard

7.15 Theme Example—Digitization of Video and MPEG

7.16 Summary and Discussion

Chapter 8 Signal-Space Analysis

8.1 Introduction

8.2 Geometric Representation of Signals

8.3 Conversion of the Continuous AWGN Channel into a Vector Channel

8.4 Likelihood Functions

8.5 Coherent Detection of Signals in Noise: Maximum Likelihood Decoding

8.6 Correlation Receiver

8.7 Probability of Error

8.8 Summary and Discussion

Chapter 9 Baseband Transmission of Digital Signals

9.1 Introduction

9.2 Baseband Pulses and Matched Filter Detection

9.3 Probability of Error Due to Noise

9.4 Intersymbol Interference

9.5 Eye Pattern

9.6 Nyquist's Criterion for Distortionless Transmission

9.7 Correlative-Level Coding

9.8 Baseband M-ary PAM Transmission

9.9 Tapped-Delay-Line Equalization

9.10 Theme Example—100BASE-TX— Transmission of 100 Mbps Over Twisted Pair

9.11 Summary and Discussion

Chapter 10 Band-Pass Transmission of Digital Signals

10.1 Introduction

10.2 Band-Pass Transmission Model

10.3 Transmission of Binary PSK and FSK

10.4 M-ary Data Transmission Systems

10.5 Comparison of Noise Performances of Various PSK and FSK Systems

10.6 Theme Example—Orthogonal Frequency Division Multiplexing (OFDM)

10.7 Summary and Discussion

Chapter 11 Spread Spectrum and Multiple Access

11.1 Introduction

11.2 Pseudo-Noise Sequences

11.3 A Notion of Spread Spectrum

11.4 Direct-Sequence Spread Spectrum with Coherent Binary Phase-Shift Keying

11.5 Signal-Space Dimensionality and Processing Gain

11.6 Probability of Error

11.7 Frequency-Hop Spread Spectrum

11.8 Multiple Access

11.9 Summary and Discussion

Chapter 12 Information and Forward Error Correction

12.1 Introduction

12.2 Uncertainty, Information, and Entropy

12.3 Source-Coding Theorem

12.4 Lossless Data Compression

12.5 Theme Example—The Lempel–Ziv Algorithm and File Compression

12.6 Discrete Memoryless Channels

12.7 Mutual Information

12.8 Channel Capacity

12.9 Channel Coding Theorem

12.10 Capacity of a Gaussian Channel

12.11 Error Control Coding

12.12 Linear Block Codes

12.13 Cyclic Codes

12.14 Convolutional Codes

12.15 Maximum Likelihood Decoding of Convolutional Codes

12.16 Trellis-Coded Modulation

12.17 Turbo Codes

12.18 Summary and Discussion

Notes and References

Problems

Multiple Choice Questions

Appendix Mathematical Tables

Glossary

Bibliography

Index

To purchase this product, please visit:

<https://www.wileyindia.com/communication-systems-5ed-isv-an-indian-adaptation.html>



Scan to buy