

# **WIRELESS COMMUNICATIONS AND NETWORKS**

**WILLIAM STALLINGS**

The book by William Stallings offers extensive coverage in the area of Wireless Networks. It does not assume any previous knowledge in the fields of Information Theory or Digital Communications. The book is apportioned into 4 parts and each of these parts can be summarized as follows:

## **1. Background**

For those with no previous exposure to Information theory or the basics of Communication networks, this part of the book offers a strong technical background. Starting with an overview of how wireless technology took shape, this part describes the fundamentals of transmission. It also takes up the ISO/OSI architecture and gives a brief introduction to the different layers. TCP/IP protocol is described in detail and the comprehensive description of ATM networks sets the tone for the following parts of the book.

## **2. Wireless Communication Technology**

This part of the book covers in detail the fundamental principles of antennas. It also deals with the aspect of Multipath and fading. Though these topics are covered in brief, they are good enough for a thorough understanding of the wireless networks described in the succeeding parts. Following this, there is an introduction to various signal encoding techniques. Also covered in this part is Error Correcting Block Codes, Spread Spectrum techniques and Convolutional Codes.

## **3. Wireless Networking**

An extensive coverage of the existing wireless networks is provided. Beginning with Satellite communications, this part of the book proceeds to give the fundamentals of cellular networks. In doing so, it gives an overview of the 2G and 3G standards. The IS-95 standard is dealt with in detail. Finally, Wireless Local Loops are discussed. The different IEEE standards and their services are detailed.

## **4. Mobile IP and Wireless Application Protocol**

This last section is devoted to Wireless LANs. Starting off with an introduction to the concept of Wireless LANs, this part proceeds to describe in detail IEEE 802.11, the wireless LAN standard. Lastly, the book provides an in-depth analysis of Bluetooth, analyzing both the physical layers and the logical flow of data between the various layers. The Frequency Hopping algorithm is also discussed.

In addition to such detailed material, the book provides lots of useful reference papers, websites and appendices. The problems at the end of each chapter are also comprehensive in their coverage. I would, therefore, strongly recommend this book for this course.

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