

## **CSE 311 COMPUTER COMMUNICATION AND NETWORKS**

[3 1 0 4]

### **1. INTRODUCTION:**

Uses of Computer Networks, Network Hardware, Network Software, Reference Models.  
(Sections 1.1 to 1.4 of Text Book 1, excluding 1.3.4 and 1.3.5) (2 hrs)

### **2. DATA TRANSMISSION:**

Concepts and Terminology, Analog and Digital Data Transmission, Transmission Impairments, Channel Capacity, Decibels and Signal Strength.  
(Chapter 3 of Text Book 2) (8 hrs)

### **3. GUIDED AND WIRELESS TRANSMISSION:**

Guided Transmission Media, Wireless Transmission.  
(Sections 4.1, 4.2 of Text Book 2) (3 hrs)

### **4. SIGNAL ENCODING TECHNIQUES:**

Digital Data, Digital Signals, Digital Data, Analog Signals.  
(Sections 5.1, 5.2 of Text Book 2) (6 hrs)

### **5. DIGITAL DATA COMMUNICATION TECHNIQUES:**

Asynchronous and Synchronous Transmission, Types of errors, Error Detection.  
(Sections 6.1, 6.2, 6.3 of Text Book 2) (4 hrs)

### **6. DATA LINK CONTROL:**

Flow Control, Error Control, Performance Issues.  
(Sections 7.1, 7.2, 7.3 Appendix 7A of Text Book 2) (6 hrs)

### **7. MULTIPLEXING:**

Frequency Division Multiplexing, Synchronous Time Division Multiplexing- Characteristics only, Statistical Time Division Multiplexing.  
(Sections 8.1, 8.2, 8.3 of Text Book 2) (3 hrs)

### **8. THE MEDIUM ACCESS CONTROL SUB-LAYER:**

The Channel Allocation Problem, Multiple Access Protocols, Ethernet, Wireless LANs.  
(Sections 4.1, 4.2.1, 4.2.2, 4.2.3, 4.2.6, 4.3.1 to 4.3.8, 4.4. of Text Book 1) (8 hrs)

### **9. THE NETWORK LAYER:**

Network Layer Design Issues, Routing Algorithms, Congestion Control algorithms.  
(Sections 5.1, 5.2.1 to 5.2.9, 5.3.1 to 5.3.5 of Text Book 1) (8 hrs)

### **Text Books:**

1. Andrew S. Tanenbaum – Computer Networks, 5<sup>th</sup> Edition, 2010 Prentice Hall of India Pvt. Ltd.
2. William Stallings – Data and Computer Communications, 7<sup>th</sup> Edition, 2004 Prentice Hall of India Pvt. Ltd.

**References:**

1. Behrouz A. Forouzan , Data Communications and Networking, Tata McGraw-Hill 4<sup>th</sup> Edition .2006
2. Computer Networking –A Top-Down Approach Featuring the Internet Tata McGraw-Hill 5<sup>th</sup> Edition .
3. Godbole, Data Communications and Networks, Tata McGraw-Hill 2002.
4. Micael A. Gallo & William M. Handcock, Computer Communications and Networking Technologies, Thomson, 2003 Edition.