Tentative Lecture Plan

Subject: Digital Communication Network (BECE1-560)

Semester: 5th

Course: B. Tech. (ECE)

Course Objectives:
The students should be made to:

1. Understand the division of network functionalities into layers.

2. Be familiar with the components required to build different types of networks.

3. Be exposed to the required functionality at each layer.

4. Learn the flow control and congestion control algorithms.

Course Outcomes:

At the end of the course, the students should be able to:

1. Identify the components required to build different types of networks.

2. Choose the required functionality at each layer for given application.

3. Identify solution for each functionality at each layer.

4. Trace the flow of information from one node to another node in the network.

Lecture	Topics
1	Introduction to Data Communication
2	Goals and Applications of Networks, Wireless Network
3	Interfaces and services
4	Reference Models: The OSI reference model
5	
6	TCP/IP reference model.
7	Physical Layer: Data and Signals
8	Digital and Analog transmission
9	Transmission Media
10	

11	Wireless transmission
12	Switching
13	Data Link Layer: Data link layer design issues
14	Services provided to Network layers, Framing
15	Error control
16	Flow control
17	Error detection and correction
18	
19	Elementary data link protocols, an unrestricted Simplex protocol
20	A Simplex Stop-and-Wait protocol
21	Simplex Protocol for a noisy channel
22	Sliding Window protocols
23	A protocol using go-back-N
24	A protocol using selective repeat
25	Example data link protocol-HDLC, PPP
26	Medium Access Sublayer: Channel Allocations
27	Random Access, ALOHA
28	Carrier Sense Multiple Access Protocols
29	Collision free Protocols, Limited Contention Protocols
30	Controlled Access, Channelization
31	Wired LANs: Ethernet, Wireless LANs
32	
33	Network Layer: Network Layer Design issue
34	Logical Addressing
35	Address Mapping, Error Reporting and Multicasting
36	Delivery Forwarding and Routing
37	Transport Layer: Process to Process Delivery: UDP, TCP and SCTP
38	Application Layer: Design issues of the layer, Domain Name systems, File
39	Transfer, http, web documents, Virtual Terminals.
Rest of the contact hours are assigned to Quiz/Test/Presentation and two MSTs	

Recommended Books:

1. J. Frauzon, 'Computer Communication and Networks', Tata McGraw Hill.

2. W. Stallings, 'Data and Computer Communication', PHI.

3. S. Keshav, 'An Engineering Approach on Computer Networking', Addison Welsey.

4. Wayne Tomasi, 'Introduction to Data Communications and Networking', Pearson.

5. A.S. Tanenbaum, 'Computer Networks', PHI.