Course Delivery Plan
Department of Computer Science and Engineering
Semester: Fall, 2017

Course Code: CSE 233 **Credit Hours: 3**
Course Title: Data Communication
Pre-requisite: CSE 212
Post- requisite: CSE 314, CSE 315, CSE 334

Course Intended Learning Outcomes:

1. Explain the tools and techniques of data communications and networking.
2. Describe briefly network technologies and identify their differences in implementation within and across enterprises.
3. Assess issues of network security and effective management of data communication networks.
4. Explain how information can be sent via communication interfaces and links.
5. Describe the LAN standards and how internetworking works.
6. Explain the use of data communication networks in real world environments.

Theory Session Plan:

Week No.	**Topics**	**Expected Learning Outcomes**	**Assessment (ASSN, CT, Mid, Final)**
Week #1	**Course Outline** **Introduction:** Overview of Data Communication, Data Communication, Network criteria, Physical Structures, Types of Connection, Categories of Network- LAN, MAN, WAN. Internet Protocols and Standards.	• Recognize the concept data communication and network. • Identify various kinds geographical networks. • Appreciate the need of internet protocols and standards.	**Assignments from the exercise of chapter 1**
Week #2	**Network Model:** Layered Task, Internet Model: Peer-to-Peer Process, OSI Model, Layers in the OSI model (elaborate discussion on each layer).	• Recognize the networking models used for seamless communication among computer user.	
Week # 3	**Network Model:** Layers in the OSI model (elaborate discussion on each layer), TCP/IP protocol suite.	• Find out how layered model communication functions can be	**Class Test #01**

		organized and be very successful in communication. • Difference between OSI and TCP/IP model.	
Week #4	**Signals:** Concept, Terminology, Analog Signals property , Digital Signal, Composite Signal, Digital Signal, Composite Signal , Analog versus Digital Signal, Data Rate limits, Transmission Impairments: Attenuation, Distortion and Noise.	• Recognize the concept of analog and digital signals and their use in day to day communication. • Identify which transmission impairments cause problems in communication and their remedies.	**Assignments from the exercise of chapter 3**
Week #5 & Week #6	**Digital Transmission:** Concept, Line coding, Unipolar, Polar, NRZ, RZ, Bipolar, Manchester, and Differential Manchester coding, Multilevel Schemes, Multiline. END OF MIDTERM SYLLEBUS Sampling, Pulse Amplitude Modulation, Pulse Code Modulation, and Transmission: Serial, Parallel, Synchronous, And Asynchronous.	• Recognize transmission used for the digital technologies modern Communication. • Identify and differentiate among various digital to digital, analog to digital conversion techniques.	**Class Test #2**
Week #7	Amplitude Shift Keying, Frequency Shift Keying. Bandwidth, Phase Shift Keying, Quadrature Amplitude Modulation, Telephone Modems, Modulation of Analog signal, Amplitude Modulation, Frequency Modulation, Phase Modulation.	• Recognize the analog transmission technologies used for modern communication. • Identify and differentiate among various digital to analog, analog to analog conversion techniques. • Appreciate what important role modulation techniques play in communication.	**Presentation**
Week #8	**Review Class**		
MIDTERM WEEK			
Week # 9 & Week # 10	Multiplexing: Concept, Frequency Division Multiplexing, Analog Hierarchy, Wave Division	• Recognize the multiplexing	

	Multiplexing, Time Division Multiplexing, Interleaving, Digital Signal Services, Inverse Time Division Multiplexing.	technologies used for modern communication. • Identify and differentiate among various multiplexing techniques and their alternatives. • Appreciate what important role multiplexing plays in communication.	**Class Test #3**
Week # 11	Error Handling: Types of errors, Error Detection vs. Error Correction, redundancy and Hamming distance coding.	• Recognize the types of errors that occur in modern communication. • Identify and differentiate among various error detection and correction techniques and their uses for different types of errors. • Appreciate what important role error correction plays in communication.	**Assignments from the exercise of chapter 6 and 10**
Week # 12	**Transmission Media:** Guided Media, Twisted Pair, Coaxial Cable, Optical Fiber. Unguided Media: Wireless Transmission. • **Review Class**	• Different types of transmission media and its uses.	
FINAL EXAM WEEK			

Text Book:

1. **Data Communication and Networking by Behrouz A Forouzan, 4th Edition**

Reference Book(s):

1. Computer Network, 4th Edition, Andrew S. Tanenbaum
2. Data and Computer Communications- 8th Edition, William Stallings
3. Web references from Google search engine.