**Lecture Plan for 6th Semester**

##### Paper: Computer Networks

##### Paper Code: CIC-307

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| **S. No.** | **Topic** | **Number of lectures** | **Books Referred** |
| **1** | Data Communications: Components, Netwrorks. Uses Of Computer Networks | **1** | [T1][R2][R3] |
| **2** | Network Hardware, Network Software, Protocol layering  Reference Model (ISO-OSI, TCP/IP), Comparison Of OSI And TCP/IP Model,  Network standardization, | **2** | [T1][R1][R2][R4] |
| **3** | Physical Layer: Theoretical Basis For Data Communication Medium, Channel Bandwidth, Digital Signals, Bit Interval,  Bit Rate, Baud Rate, | **2** | [T1][R2][R3] |
| **4** | Transmission Media- **Guided** **media-** Charcteristics, Advantages, Disadvantages, Standards and Applications of Twisted Pair, Co-axial and Fiber Optics Cables | 1 | [T1][R2][R3][R4] |
| **5** | Transmission Media- **Unguided** **media-**Radio Wave Transmission, Microwave Transmission | **1** | [T1][R2][R3][R4] |
| **6** | Multiplexing- FDM,WDM,TDM, Switching- Circuit Switching and Packet Switching | **2** | [T1][R2][R3] |
| **7** | The Data Link Layer: Data Link Layer Design Issues, Error Detection And Correction Techniques | **2** | [T1][R2][R4] |
| **8** | Cyclic Redundancy Check  Requirements Of CRC  Hamming Codes  Parity Bits | **2** | [T1][R2][R3] |
| **9** | Data Link Protocols  Simplex  Stop And Wait Protocol  Protocol For Noisy Channel  Piggy Backing | **2** | [T1][R2][R3] |
| **10** | Sliding Window Protocols  One Bit Sliding Window Protocol, Pipelining,  Selective Repeat ARQ  Protocol Performance | **2** | [T1][R2][R3] |
| **11** | Examples Of Data Link Protocols HDLC and PPP | **2** | [T1][R2] |
| **12** | The Medium Access Sub layer: The Channel Allocation Problem  Static Channel Allocation  Dynamic Channel Allocation | **2** | [T1][R1][R2][R3] |
| **13** | Multiple Access Protocols  Aloha  Pure Aloha  Slotted Aloha  CSMA  Bit Map Protocol | **2** | [T1][R2][R1][R3] |
| **14** | IEEE Standard 802.3 and 802.11 For LANs And WLAN’s | **1** | [T1][R2] |
| **15** | Network Devices  Repeaters  Hubs  Switches  Bridges and Routers | **1** | [T1][R2][R4] |
| **16** | Transmission network-PDH network, SONET/SDH networks, DWDM networks | **2** | [T1][R2] |
| **17** | Introduction to cell switched networks – ATM and Packet switched networks | **1** | [T1][R2] |
| **18** | The Network Layer: Network Layer Design Issues | **1** | [T1][R2] |
| **19** | Routing Algorithms-Static routing algorithms, Dynamic routing algorithms | **3** | [T1][R2] |

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| **20** | Congestion Control Algorithms, Quality of Service- Leaky bucket algorithm, Token bucket algorithm | **3** | [T1][R2] |
| **21** | The Network Layer In The Internet, Introduction to IPV4 Addressing | **1** | [T1][R2] |
| **22** | Sub network and sub netting, IPV4 protocol packet format, forwarding of IP packets, IPV4 vs. IPV6,Congestion control algorithm | **2** | [T1][R2] |
| **23** | Process to process delivery, Overview of TCP and UDP, TCP vs. UDP, QoS | **2** | [T1][R2] |
| 24 | Transport layer- Transport layer services-elements of transport protocol, connection oriented and connection less, Congestion Control. | **1** | [T1][R1][R2] |
| 25 | Transport Layer: Client Server Model, DNS, SMTP,HTTP, WWW. | **1** | [T1][R1][R2] |

**Textbook(s):**

[T1] Behrouz A. Forouzan, “Data Communications and Networking”, Tata McGraw-Hill.

**References:**

[R1] Uyless Black,"Computer Networks-Protocols, Standards and Interfaces",2nd edition, PHI, 1996.   
[R2] A. S. Tannenbum, D. Wetherall,, “Computer Networks”, Prentice Hall, Pearson.

[R3] Fred Halsall, “Computer Networks”, Addison – Wesley.

[R4] Tomasi, “Introduction To Data Communications & Networking”, Pearson