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| **Computer Communication and Networks**  Mansoor Qadir | |
| **Credit Hours:** 3 |  |
| **Prerequisites:** None | |
| **Objectives:**  To introduce students to the concept of computer communication. Analogue & digital transmission. Network Layers, Network models (OSI, TCP/IP) and Protocol Standards. Emphasis is given on the understanding of modern network concepts. | |
| **Course Outline:**  Analogue and digital Transmission, Noise, Media, Encoding, Asynchronous and Synchronous transmission, Protocol design issues. Network system architectures (OSI, TCP/IP), Error Control, Flow Control, Data Link Protocols (HDLC, PPP). Local Area Networks and MAC Layer protocols (Ethernet, Token ring), Multiplexing, Switched and IP Networks, Inter-networking, Routing, Bridging, Transport layer protocols TCP/IP, UDP. Network security issues. Programming exercises, labs or projects involving implementation of protocols at different layers. | |
| **Textbook:**   1. Data Communications and Networking [5th Edition] - Behrouz Forouzan   **Reference Material:**   1. Introduction to Computer Networks /4, A. S. Tanenbaum, Prentice Hall 2003 2. Computer Networks and Internets, 5/E, 2008 Douglas E. Comer, Purdue University ISBN-10: 0136061273 ISBN-13: 9780136061274 Publisher: Prentice Hall 3. Data and Computer Communications By William Stallings Published by Macmillan Pub. Co., 8th Edition 2006 | |

**Grading Policy:**

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| **Mid-Term Exam** | **30 Marks** |
| **Assignments** | **10 Marks** |
| **Quizzes/ Tests/ Presentations** | **10 Marks** |
| **Final Term Exam** | **50 Marks** |

**Syllabus and Schedule:**

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| **Week** | **Topics** | **Activities** |
| **Week 01** | Evolution of computer network, Basic concepts of Data communication system, Networks  Network Topologies, Network categories,  The internet | Course outlines, Semester Plan, & model papers of mid–term & final semester exam were given to the students. |
| **Week 02-03** | Network Models  Layered tasks  OSI Model  OSI Reference Model Layers  Internet model (TCP/IP protocol suite) | Behrouz A Forouzan Ch 2  Home Work: Solve Exercise  Quiz 1 |
| **Week 04-05** | Analog and Digital Signals  Line Coding: D/D, A/D,D/A,A/A | Behrouz A Forouzan Ch 3, 4, 5  Home Work: Solve Exercise  Assignment 1  Quiz 2 |
| **Week 06** | Multiplexing  FDM, TDM, CDM, OFDM | Behrouz A Forouzan Ch 6 |
| **Week 07** | Data Link Control  Framing, Flow and Error Control  Protocols, Noisy Channels | Behrouz A Forouzan Ch 11  11.1, 11.2, 11.3, 11.4, 11.5  Home Work: Solve Exercise  Quiz 3 |
| **Week 08** | Multiple Access  Random Access, ALOHA, CSMA/CD, CSMA/CA | Behrouz A Forouzan Ch 12  12.1 Home Work: Solve Exercise |
| **Week 09** | Network Layer  Logical Addressing, IPV4 Addresses, Classful & Classless Addressing | Behrouz A Forouzan Ch 19.  19.1,19.2 Home Work: Solve Exercise |
| **Week 10-11** | Network Layer  Internetworking , IPV4 | Behrouz A Forouzan Ch 20  20.1, 20.2  Assignment 2 Home Work: Solve Exercise  Quiz 4 |
| **Week 12** | Address Mapping  ICMP, IGMP | Behrouz A Forouzan Ch 21  21.1, 21.2  Home Work: Solve Exercise |
| **Week 13, 14** | Application Layer  DNS, Name Space, Domain Name Space, Remote Logging, Email, File Transfer | Behrouz A Forouzan Ch 25, 26  25.1, 25.2, 26.1, 26.2, 26.3  Assignment 3  Home Work: Solve Exercise  Quiz 5 |
| **Week 15** | WWW and HTTP  Architecture, Web Documents, HTTP | Behrouz A Forouzan Ch 27  27.1, 27.2, 27.3  Quiz 6  Home Work: Solve Exercise |
| **Week 16** | Revision |  |