

Department of Computer Engineering			
Computer Networks (66453)			
Total Credits	3		
major compulsory			
Prerequisites	P1 : Computer Architecture I (66323)		
Course Contents			
1. Wide Area Networks -Overview Circuit Switched Networks Packet Switched Networks. Cell Switched Networks. Data Link and Network Protocols in WANs 2. LAN Design Issues Review of Ethernet Fast and Gigabit Ethernet. Virtual LANS (VLANS). LAN Design: Switching. Fiber Optics 3. Wide-Area Networks- Technologies Frame Relay ATM Other WAN technologies: e.g. SMDs, ISDN 4. Network Programming HTTP protocol issues Server to Server Communication using PHP Distributed Java Programming of networks Advanced Java Script issues 5. Routing Issues Cisco Routing: IGRP, EGRP Exterior Gateway Protocols: EGP,BGP Cisco Access Lists and Protection in Routers Writing Access Lists for Cisco Routers 6. Network Management SNMP Protocol MIB structure. SNMP v2 and SNMP V3 Writing SNMP-Interface Software 7. Wireless networks Wireless Links and Protocols, CDMA WiFi: 802.11 Wireless Lans Bluetooth and WiMAX Mobile IP 802.15.14 protocol Zigbee and MiWi 8. Network Security Network Security principles Principles of Cryptology Securing TCP connections: SSL Network layer Security Firewalls			
Intended Learning Outcomes (ILO's)		Student Outcomes (SO's)	Contribution
1	Acquire Fundamental knowledge in hardware and software aspects of networking, communication technologies and applications.	C	15 %
2	Acquire Fundamental and advanced knowledge in network layering models and protocols	C J	15 %
3	Fundamental knowledge in network communication encoding, addressing, routing, and applications	C E K	15 %
4	Fundamental knowledge in network classification and operations: LANs, WANs, Wireless	C J	10 %
5	Fundamental knowledge in technologies and enhancements of wired and wireless networks	J	15 %
6	Acquire skills in network programming using the socket interface and the TCP/IP stack	C E K	15 %
7	The ability to write network programs at the Application and Transport Layer	C J	15 %
Textbook and/ or References			
Text Book:: Andrew Tannenbaum, Computer Networks/ Comer: Computer Networks and Internets.			
Assessment Criteria		Percent (%)	
First Exam		20 %	
Second Exam		20 %	
Homeworks		15 %	
Final Exam		45 %	
Course Plan			
Week	Topic		
1	Introduction to Computer Networks, LANs, MANs, WANs		

2	Protocols, Layering, ISO, and TCP /IP Models, Encoding, Media Services.
3	Data Link Layer: Framing, Error Control
4	Data Link Layer: Flow Control
5	Internet Protocols: IP , TCP , UDP
6	TCP/IP Programming: Sockets and Socket Programming
7	MIDTERM EXAM 1
8	Application Layer: Client Server Paradigm, FTP, HTTP, EMAIL, DNS,
9	Local Area Networks: MAC, Ethernet, Token Ring, Wireless
10	Fast and gigabit Ethernet Switches, Bridges.
11	Wireless Networks
12	Network Layer, IP, ICM and ARP protocols
13	Routing Protocols: IGP, EGP, Distance Vector Routing
14	MIDTERM EXAM 2
15	Link State Routing, BGP
16	Transport Layer: TCP and UDP specifics, Congestion Control