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Department of Computer Engineering	
Computer Networks II (66455)	
Total Credits	**3**
major compulsory	
Prerequisites	P1 : Computer Networks I (66454)

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 SNMPv2 and SNMPv3 Writing SNMP-Interface Software Network Simulator (NS) 7. Wireless and Mobile Networks Wireless Links and Protocols, CDMA WiFi: 802.11 Wireless LANs Bluetooth and WiMAX Cellular Networks Mobility Management Principles Mobile IP 802.15.14 protocol: PAN Networks, Zigbee and MiWi 8. Network Security Network Security Principles: Confidentiality, Integrity, Authentication, Access and Availability Principles of Cryptology: Symmetric and Public Key Encryption Message Integrity and Endpoint Authentication: Hash Functions, Digital Signatures and Endpoint Authentication Securing TCP connections: SSL Networks Layer Security Firewalls

	Intended Learning Outcomes (ILO's)	Student Outcomes (SO's)	Contribution
1	Acquire Intermediate and Advanced Knowledge in Routing, WANs and LAN technologies with emphasis on Frame Relays, ATM, design issues in LANs, VLANs, BGP routing and other related issues.	C	30 %
2	Acquire knowledge and skills in network management and programming with emphasis on skills in Application Layer Programing and the ability to write SNMP Interface software.	E	30 %
3	Acquire fundamental and advanced Knowledge in Wireless and Mobile Networks	K	20 %
4	Acquire Fundamental Knowledge of Network Security at the various Layers of Networks including Cryptology, Authentication, Integrity, Firewalls, Router Access lists, and other related security Issues.	K	20 %

Textbook and/ or Refrences

Text Books:: Kruose and Ross, Computer Networks-A top Down Approach Andrew Tannenbaum, Computer Networks Several Manuals: Cisco Books, Wireless Protocol manuals, Zigbee, MiWi, and others

Assessment Criteria	Percent (%)
First Exam	20 %
Second Exam	20 %
Homeworks	15 %
Final Exam	45 %

Course Plan

Week	Topic
1	Overview of WANs
2	Frame Relay and ATM
3	VLANs
4	LANs: Design Issues
5	Network Programming: HTTP and PHP
6	Network Programming: Distributed Java
7	MIDTERM EXAM 1
8	Routing issues, Access Lists
9	SNMP and Network Simulator
10	Wireless Networks:
11	Wireless Networks: 802.11
12	Wireless Networks. Mobile IP
13	Wireless networks: Zigbee, Bluetooth, WiMi
14	MIDTERM EXAM 2
15	Network Security: Principles Cryptology
16	Network Security: SSL, Network Layer, Firewalls.