Punjab University College of Information Technology, University of the Punjab

Course Outline

Title	**Computer Networks**
Code	**CMP-330**
Credit Hours	3 ***Theory/week:*** Weight 3 Cr. Hrs. Contact Hours 3 Hrs. Lectures: 2 Duration 1.5 Hrs. ***Lab/week:*** Weight 1 Cr. Hrs. Contact Hours 3 Hrs. Labs. 1 Duration 3 Hrs.
Prerequisite	No specific pre-requisite, although some programming concepts will be required for assignments.
Follow Up	Advance Computer Networks
Category	Core
Aims and Objectives	Topics include internetworking philosophies, unicast and multicast routing, congestion control, network quality of service, network-aware applications.
Learning Outcomes	• Student understand the basics of computer networking • Learning of TCP/IP stack • Understanding of layers of TCP/IP stack will be achieved • Understanding of Application, Transport, Network and Link layer protocols will be accomplished
Syllabus	This course studies computer networks and the services built on top of them. Topics include packet switched and circuit switched networks, routing and flow control, congestion control and quality-of-service, Internet protocols (IP, TCP, BGP), the client-server model and RPC, elements of distributed systems (naming, security, caching, consistency) and the design of network services (peer-to-peer networks, file and web servers, content distribution networks).
Text Book/s	A. Computer Networking: A Top-Down Approach Featuring the Internet (6th edition)
Reference Material	B. Computer Networks: A Systems Approach (5th edition)
Instructional Aids/Resources	• Windows Environment • Linux • Wireshark • Multimedia in Class Rooms as well as in Labs • Photocopy Facility for Handouts/Case Studies
Assessment Criteria	

Sessional 25%	**Mid 35%**	**Final 40%**	**Total 100%**
Quizzes and Homework			
Programming Assignment			
Attendance and Class Participations			

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Week	**Topic**	**Source** (Book-Chapter No. Section No.)	**Recommendations for Learning Activities** (Mention Hoemwork, Quizzes, Programming Assignments, Lab Work or Reading Assignments)
1	What is Internet?	Text A-Ch1	N.A.
	The Network Edge	Text A-Ch1	N.A.
2	The Network Core	Text A-Ch1	N.A.
	Delay, Loss and throughput in Packet switched networks	Text A-Ch1	N.A
3	Protocol layers and their service models	Text A-Ch1	Quiz
	Principles of Network Applications	Text A-Ch2	Programming Assignment
4	The Web and HTTP	Text A-Ch2	Quiz
5	Email	Text A-Ch2	N.A
	DNS	Text A-Ch2	N.A
6	P2P	Text A-Ch2	N.A
	Socket Programming TCP	Text A-Ch2	N.A.
7	Socket Programming UDP	Text A-Ch2	Quiz
	Transport layer services	Text A-Ch3	N.A.
8	Multiplexing and demultiplexing, UDP	Text A-Ch3	Quiz
	Principles of Reliable Data Transfer	Text A-Ch3	N.A.
9	**Mid-Term**		
10	TCP	Text A-Ch3	Submission of Programming Assignment
	Principles of Congestion Control	Text A-Ch3	Programming Assignment
11	TCP Congestion Control	Text A-Ch3	Quiz
	Network Layer Introduction	Text A-Ch4	N.A
12	Virtual circuits and Datagram networks	Text A-Ch4	N.A
	What's inside a router	Text A-Ch4	N.A
13	IP	Text A-Ch4	Quiz
	Routing Algorithms	Text A-Ch4	N.A.
14	Routing in the Internet	Text A-Ch4	Submission of Programming Assignment
	Broadcast and Multicast Routing	Text A-Ch4	Quiz
15	Link Layer	Text A-Ch5	N.A
	Error Detection and Correction Techniques	Text A-Ch5	N.A
16	MAC	Text A-Ch5	N.A
	Link Layer Addressing	Text A-Ch5	N.A.