Birla Institute of Technology & Science, Pilani, K. K. Birla Goa Campus
Second Semester 2013-2014
Course Handout (Part II)

In addition to Part One (General Handout for all courses appended to the time table) this part gives further specific details regarding the course.

Course Code : CS C461 / IS C461 / CS F303 / IS F303
Course Title : Computer Networks
Instructor(s) : SREEJITH V (A-421) ***Email***: srev@goa.bits-pilani.ac.in
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Objective and Scope of the Course: The course aims at providing a sound conceptual foundation in the area of Computer Networks with emphasis on the design aspects. The course attempts to provide a balanced treatment of the state-of-the-art in the area and thus prepares the students for taking more rigorous and specialized courses in this and related fields. At the end of this course, students should be able to analyze, design, troubleshoot, configure mange and maintain commonly used network types apart from being able to begin Network-oriented Software development.

Course Material:
Text Book:
T1. Larry L. Peterson & Bruce S. Davie: Computer Networks: A Systems Approach, Third Edition, Morgan Kaufmann / Elsevier, New Delhi, 2003.
T2. Alberto Leon-Garcia and Indra Widjaja, Communication Networks: Fundamental Concepts and Key Architectures, Second Edition, Tata McGraw-Hill, 2004.
Reference Books:
R1. A. S. Tanenbaum: Computer Networks, Fourth Edition, Pearson Education, New Delhi, 2003.
R2. D. E. Comer: Internetworking with TCP/IP, Volume 1, Fifth Edition, Pearson Education, 2004.
R3. S. Keshav: Computer Networking: An Engineering Approach, Pearson Education, New Delhi, 1997.
R4. James F. Kurose, and Keith W. Ross: Computer Networking: A Top-Down Approach Featuring the Internet, Third Edition, Pearson Education, 2006.

Course Plan: ***<Shaded items below indicate self-study topics>***

Lecture No.	Topic(s) to be discussed	Section(s) of the Text Book
1	Introductory Concepts & Overview	T1(1.1-1.2), R4(1)
2-3	Fundamental Networking Concepts & Reference Model	T2(2), R1 (1- 2)
4-5	Network Topologies, Network Devices	T2(2), R1(1), R2(5)
6-8	Application Level aspect of Networking, DNS, HTTP, FTP,	R1(2), T2(3), R2(4)
9-10	Email Protocols : SMTP, MIME, POP & IMAP	R1(2), T2(3), R2(4)
Peer2Peer, SNMP Basics		***T1 9.1.4, 9.4.2***
11-12	Transport Layer Services & Principles - UDP, TCP Design ,Merits, Demerits, Applications	T1 (5.6 & 4.3)
13-14	Remote procedure call, Performance aspects of Transport Protocols	Class Notes, R4(3)
15	Congestion Control, Avoidance, Resource Allocation, QoS	R4(3.6-3.7)
SCTP - Stream Control Transmission Protocol		***T1 (5.6)***
16-18	Introduction to Inter-networking: Interconnection of Networks IPv4, ICMP, Subnetting, CIDR and related basics	T1(4.1, 4.2, 4.4-4.7) T2(8.2,8.6, 8.8)
19-20	Introduction to Routing (packet routing), Routing Protocols, Metrics, Protocols for Inter-Domain Routing, BGP	T1(5.1-5.2) , R4(4.5-4.6)

21-23	IPv6 Fundamentals, IGMP, Multicast Routing Fundamentals, Elements of a Simple Router Design	T1(5.3, 5.5, 5.7) R4(4.7)
24-25	Data Link Layer: Design Issues, Protocols	R1(3.1-3.4)
26-27	The MAC sub-layer, Ethernet	R1(4.2-4.3)
ARP & RARP, DHCP		***R4 5.4***
28-30	Wireless Networks: Wireless Links and Network Characteristics, CDMA, Wi-Fi: 802.11 Wireless LAN Architecture and Protocol	R4(6.3), R1(4.4)
31	Addressing and Routing for Mobile Hosts	Class Notes
32-33	Data Encoding and Framing Basics, Error handling in link-layer communication	T1(2.2-2.4)
34	Protocol for Reliable link layer data delivery	T1(2.5)
35-38	Switching technology- Introduction to Packet Switching, Cell Switching basics in context of ATM, Working of ATM LAN's, MPLS	Class Notes, T2(9)
39-40	Design, Implementation and Performance Aspects of Packet Switches	T2(7)
41	Security aspects of Networking	R4(8.1)
42	Network design Issues & Case studies	Class Notes

Evaluation Scheme:

Component	Type	Duration	Weightage(%)	Date & Time
Test I	Closed Book	60 Min	20	As per the Timetable
Test II	Closed Book	60 Min	20	As per the Timetable
Lab Evaluation			15	
Lab Attendance			10	
Comprehensive Exam	Closed Book	3 Hours	35	As per the Timetable

Notices: All notices shall be displayed on the moodle server(Photon) and/or in CS/IS Notice Board. Class participation is strongly encouraged to demonstrate an appropriate level of understanding of the material being discussed in the class.

Make-up Policy: Only in genuine cases, on a case-by-case basis, make-up shall be allowed. Prior permission of the Instructor-in-charge is necessary.

Chamber Consultation Hours: To be announced in class.

Instructor-In-Charge
CS C461 / IS C461