Birla Institute of Technology & Science, Pilani
Work-Integrated Learning Programmes Division
First Semester 2011-2012
Course Handout

Course No. : EA ZC451

Course Title : Internetworking Technologies

Instructor : Vishal Gupta, Aloka S, Priyanka Nama

Course Description :

Introduction to internetworking concepts; the Internet architecture; goals and key issues related to Internetworking technologies; design aspects; relevant protocols; agent technology and tools relevant to the Internet; techniques of data compression; voice, video, and interactive video-on-demand over the Internet; multimedia operating systems and their impact; multimedia operating systems and their impact; multimedia networking; Internet security; case studies.

Scope and Objectives

The course aims at providing a sound conceptual foundation in the area of Multimedia Internetworking Technologies 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 internetwork types apart from being able to begin Internetwork-oriented Software development.

Text Book(S)

T1. *Rao, K. R and others,* Multimedia Communication Systems, Prentice Hall of India, 2002.

T2. *Rahul Banerjee:* Internetworking Technologies: An Engineering Perspective, Prentice-Hall of India, 2003

Reference Books:

R1. *Nalin K. Sharada:* Multimedia Information Networking, Prentice-Hall of India, New Delhi, 2002.
R2. *A. S. Tanenbaum:* Computer Networks, Fourth Edition, Pearson Education, New Delhi, 2003. *<Conceptual Approach>*
R3. *D. E. Comer:* Internetworking with TCP/IP, Volume 1, Fourth Edition, Pearson Education, 2001. *<Protocol Approach>*
R4. *Thomas G. Robertazzi:* Computer Networks and Systems: Queuing Theory and Performance Evaluation, Third Edition, Springer-Verlag, New York, 2000. *<Analytical approach>*
R5. *S. Keshav:* Computer Networking: An Engineering Approach, Pearson Education, New Delhi, 1997.
R6. *Prabhat K. ANdleigh & Kiran Thakur:* Multimedia Systems Design, Prentice-Hall of India, New Delhi, 2002.

Plan of Self Study

Lecture No.	Week	Topic(s)	Section(s) of the Text Books
1.	1	Introduction to Multimedia Communication Systems and Models	T-1: 1.1-1.4
2.		Multimedia Network Requirements and related concepts	T-1: 1.5-1.8
3.		Audio and Video Integration	T1: 2.1-2.3
4.	2	Audio-to-Visual Mapping basics	T1: 2.8 to 2.10
5.		Multimedia Processing in communications	T1:3.1 to 3.4, 3.12, 3.13, 3.16
6.		Watermarking, Organizational, storage and retrieval issues, Multimedia Processors Distributed Multimedia Systems: basics DMS: Networking	T1:4.1-4.4
7.	3	DMS: Operating systems, Servers, Applications	T1:4.5 – 4.7
8.		Multimedia Communication standards: Basics, MPEG-1, MPEG-2	T1: 5.1-5.4
9.		MPEG-4 basics	T1: 5.5, 5.10.5
10.	4	Packetized Audio-Video over IP Networks	T1: 6.1-6.2, 6.4
11.		MM over DSL	T1: 6.5-6.6
12.		MM over Wireless and Mobile Networks	T1: 6.7
Syllabus for Mid-Semester Test (Closed Book): Topics in Week No. 1 to 4			
13.	5	Internetwork design principles	T-2: 1.1-1.11
14.		Multimedia over Internetworks: An extended design perspective, Multimedia Internetwork Design and Classification	T-2: 2.1-2.15
15.		A brief introduction to data compression in the context of internet-based content delivery	T-2: 3.1-3.10
16	6	Introduction to Intelligent Agents, Intelligent Agents as applicable to Internetworking Applications	T-2: 4.1-4.12
17		Introduction to the TCP/IPv6 Internetworking	T-2: 5.1-5.6
18		Major Internet Routing Architectures	T-2: 6.1-6.7
19.	7	Major Internet Management Architectures	T-2: 7.1-7.4
20.		Major Internet Security Architectures	T-2: 8.1-8.5
21.		Introduction to Video-on-Demand Systems for IP Internetworks	T-2: 9.1-9.6
22.	8	Internetworking Aspects of Digital Library Architectures	T-2: 10.1-10.6
23.		A short introduction to I-Commerce Architectures	T-2: 11.1-11.11
24.		Internet Programming Review: A cursory look	T-2: 12.1-12.9
Syllabus for Comprehensive Exam (Open Book): All topics given in Plan of Self Study			

Evaluation Scheme:

EC No.	Evaluation Component & Type of Examination	Duration	Weightage	Day, Date, Session,Time
EC-1	Assignment/Quiz	TBA	10%	TBA
EC-2	Mid-Semester Test **(Closed Book)***	2 Hours	30%	Sunday, 04/09/2011 (AN)* 2 PM – 4 PM
EC-3	Comprehensive Exam **(Open Book)***	3 Hours	60%	Sunday, 30/10/2011 (AN)* 2 PM – 5 PM

*** Legend:**
AN: AfterNoon Session**; FN:** ForeNoon Session; **TBA** : To be announced
Closed Book Test: No reference material of any kind will be permitted inside the exam hall.
Open Book Exam: Use of any printed / written reference material (books and notebooks) will be permitted inside the exam hall. Loose sheets of paper will not be permitted. Computers of any kind will not be allowed inside the exam hall. Use of calculators will be allowed in all exams. No exchange of any material will be allowed.

Note:
It shall be the responsibility of the individual student to be regular in maintaining the self study schedule as given in the course handout, attend the online/on demand lectures as per details that would be put up in the BITS WILP website **www.bits-pilani.ac.in/dlp-home** and take all the prescribed components of the evaluation such as Mid Semester Test and Comprehensive Examination according to the Evaluation Scheme given in the respective Course Handout. If the student is unable to appear for the Regular Test/Examination due to genuine exigencies, the student must refer to the procedure for applying for Make-up Test/Examination, which will be available through the **Important Information** link on the BITS WILP website on the date of the Regular Test/Examination. The Make-up Tests/Exams will be conducted only at selected exam centres on the dates to be announced later.

Instructor-in-Charge