Birla Institute of Technology & Science, Pilani
Hyderabad Campus

SECOND SEMESTER 2022 – 2023

Date: 16-Jan.-2023

COURSE HANDOUT (PART II)

In addition to Part I (General Handout for all courses appended to the timetable) this handout gives further details regarding the course.

Course No : **CS F413**
Course Title : Internetworking Technologies
Instructor-in-charge : Dr. Nikumani Choudhury

1. **Scope and Objective of the Course:** Internetworking is a term utilized by the system items and services as a far-reaching term for all the ideas, innovations, and generic devices that permit individuals and their PCs to communicate across different kinds of networks. For instance, somebody at a PC on a token ring local area network may need to communicate someone at a computer on an Ethernet local area network in another country using a wide area network interconnection. The common internetwork protocols, routing tables, and related network devices required to achieve this communication constitute internetworking.

   The main objective of this course is to give the students exposure to:

a. Different addresses used in an internetwork
b. LAN/WAN protocols, architectures and topologies
c. Path selection and routing protocols, MAC sub-layer and frame formats
d. Mobile IP and Mobile TCP

2. **Text Book:**

T1. Behrouz Forouzan. Data Communications and Networking. McGraw Hill Education, Fifth edition.

3. Reference Books:

(i) James F. Kurose and Keith W. Ross, Computer Networking: A Top-Down Approach, Pearson Education, 6th Edition, 2022.

(ii) J.H.Schiller. Mobile Communications. Person Education, 2nd Ed.

4. **Course Plan:**

Lecture No.	Learning Objectives	Topics to be covered	Chapter in the Text Book
1-2	Learn what makes up an internetwork. Learn about the different types of addresses used in an internetwork.	Introduction to Internetworking and Internetworking Technologies	T1: Chapter 1
3-8	• Learn about different LAN protocols.	Introduction to Wired	T1:

	• Understand the different methods used to deal with media contention. • Learn about different LAN topologies.	and Wireless LAN protocols	Ch.13/class notes Ch.15/class notes
9-12	• Become familiar with WAN terminology. • Learn about different types of WAN connections. • Become familiar with different types of WAN equipment.	Introduction to WAN Technologies	T1: Ch. 13/class notes
13-15	Learn about different LAN protocols. Learn about the different methods used to deal with media contention. Learn how to connect different LANs.	Bridging basics	T1: Ch. 13/class notes
16-19	Learn the basics of internetworking routing protocols. Learn about the metrics used by routing protocols to determine path selection. Understand the difference between routed protocols and routing protocols.	Internetworking routing protocols.	T1: Ch. 21/class notes
20-21	Become familiar with the basic functions of a network management system	Basics of network management	T1: Ch. 27/class notes
22-23	Understand the required and optional MAC frame formats, their purposes, and their compatibility requirements. List the various Ethernet physical layers, signalling procedures, and link media requirements/limitations.	Ethernet	T1: Ch. 13, class notes
24	Describe the background of Token Ring technology. Learn how Token Ring works	Token Ring	T1: Ch.12
25	Describe how Frame Relay works. Describe the primary functionality traits of Frame Relay. Describe the format of Frame Relay frames and implementations.	Frame relay	T1: Ch. 12, class notes
26	Describe ISDN devices and how they operate. Describe the specifications for ISDN data transmittal for the three layers at which ISDN transmits.	ISDN	T1: Ch. 14, Class Notes
27	Describe the development of PPP. Describe the components of PPP and how they operate. Provide a summary of	P2P protocol	T1: Ch. 11, Class Notes

	the basic protocol elements and operations of PPP.		
28	Understand the basics of how L2TP can be used to build a VPN. Learn how L2TP's Layer 2 protocols enable secure passage through unsecured networks. Explain the relationship between L2TP and IPSec.	Virtual Private Networks	T1: Ch. 17, class notes
29-31	Learn about different LAN bridging technologies such source-route bridging, transparent bridging, etc.	Bridging technologies and LAN switching	T1: Ch. 13, Class Notes
32-35	Understand the ATM cell structure. Identify the ATM model layers. Know the ATM connection types. Understand the advantages of MPLS. Learn the components of an MPLS system	ATM switching and MPLS	T1: Ch. 14, class notes
36-39	Learn wireless LAN architecture. Channel access protocols.	WLAN Architecture	T1: Ch. 15, class notes
40-42	Learn basics of Mobile IP and its architecture. Learn mobile TCP and some popular protocols.	Mobile IP and TCP	T1: Ch. 19, class notes

5. Evaluation Scheme:

EC No.	Evaluation Component	Duration (Min)	Weightage (%)	Date & Time	Nature of Component
1.	Mid-Sem	90	30	16/03 11:30-1:00 PM	Closed Book
2.	Comprehensive	180	40	15/05 AN	Closed Book
3.	Quiz (Best 2 out of 3)	20	(5+5=10)	TBA (One Pre-Mid semester)	Open Book
4.	Assignment/Project	NA	20	TBA	Open Book

6. Chamber Consultation Hour: Every Thursday 10-11 A.M.

7. Notices: Notices regarding the course will be put up in CMS.

8. Makeup Policy: Makeup for mid-sem and comprehensive exams will be allowed only in genuine cases and with prior permission from the I/C. No makeup for quizzes.

9. Academic Honesty and Integrity Policy: Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.