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**SECOND SEMESTER 2020 – 2021**

Date: 16-Jan.-2021

**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. Suvadip Batabyal

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.
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, 5th Edition, 2010.

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

1. **Course Plan:**

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| **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. * Understand the different methods used to deal with media contention. * Learn about different LAN topologies. | Introduction to Wired and Wireless LAN protocols | T1: 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 the basic protocol elements and operations of PPP. | P2P protocol | T1: Ch. 11, Class Notes |
| 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 |

1. **Evaluation Scheme**:

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| **EC No.** | **Evaluation Component** | **Duration**  (Min) | **Weightage**  **(%)** | **Date**  **& Time** | **Nature of Component** |
| 1. | Mid-Sem | 90 | 30 | 01/03 11.00 -12.30PM | Open Book |
| 2. | Comprehensive | 120 | 40 | 01/05 AN | Open Book |
| 3. | Quiz (2) | 20 | 20 | TBD  (One Pre-Mid semester) | Open Book |
| 4. | Assignment/Project | NA | 10 | TBA | Open Book |

6. Chamber Consultation Hour: Every Wednesday 10-11 A.M. Link: https://meet.google.com/fyg-ivuz-mhz

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

8. Makeup Policy: Makeup for tests and comprehensive exams will be allowed only in genuine cases and with prior permission from the I/C.

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.

INSTRUCTOR-IN-CHARGE