



School of Computer Engineering

LESSON- PLAN

Academic Session: Autumn sem. 2022

Semester: 5th

Subject code: IT-3009

Subject Name: Computer Networks

Course Faculties: Prof. Pinaki Sankar Chatterjee, Prof. Niranjan Kumar Ray, Prof. Manas Ranjan Lenka, Prof. Aleena Swetapadma, Prof. Sushruta Mishra, Prof. Jayanti Dansana, Prof. Ashish Singh, Prof. Jay Sarraf, Prof. Amit Kumar V.Jha, Prof. Sankalp Nayak, Prof. Ayaskanta Mishra, Prof. Sruti S. Singh, Prof. P. Sunil, Prof. Jyotiprakash Mishra, Prof. Madhukrishna Priyadarsini, Prof. Soumya Ranjan Mishra, Prof. Bhaswati Sahoo

Course Outcome :

At the end of the course, the students will be able to

CO1: understand different models used for study of computer networks and ability to identify different designs.

CO2: analyze how information transforms while moving through network and understand different technologies used to improve efficiency of communication.

CO3: understand how to preserve the integrity of data communication on network.

CO4: design and engineer routes to create interconnect of nodes .

CO5: understand working of world wide web and electronic mail technologies.

CO6: Design and implement a network protocol.

Scheme of Evaluation:

Full marks for the Computer Networks theory is 100, which is divided into the following components.

- Internal Assessment (30 Marks) :
 {Assignments/quizzes/Activities (20 Marks) + Continuous Evaluation (10 Marks)}
- Mid Semester (20 Marks)
- End Semester (50 Marks)

Course Coverage and Delivery plan:

Module Name	Topics/Coverage	No. of lectures	Lectures serial nos.
Introduction	<ol style="list-style-type: none">1. Introduction to computer Networks2. Packet and circuit switching3. OSI Reference Model and TCP/IP Protocol Suite4. Protocol Layers and service model5. Delay and throughput in Packet-switched Network3. Tutorial/Activity	4	1-4
Application Layer	<ol style="list-style-type: none">1. Architecture and principles of network applications (client-server, peer-to-peer, hybrid)2. HTTP: Working, Message Formats3. DNS functionality, Architecture (iterative and recursive), record (A, NS, MX, CNAME etc.)4. E-mail components and architecture5. Tutorial/Activity	6	5-10
Transport Layer	<ol style="list-style-type: none">1. Introduction and Transport Layer services2. Multiplexing and de-multiplexing of data3. Flow Control in Transport Layer<ul style="list-style-type: none">-stop-and-wait-Go-back-N-Selective-Repeat4. UDP<ul style="list-style-type: none">-Services-Applications-Segment format5. TCP<ul style="list-style-type: none">-Services-Segment format-TCP Connection management-State Transition Diagram-Windows in TCP-Flow Control-Congestion Control (slow start, congestion avoidance, and fast recovery)6. Tutorial/Activity	12	11-22

Network Layer	<ol style="list-style-type: none"> 1. Overview and services 2. IPv4 datagram format 3. IPv4 addressing, subnetting and supernetting 4. DHCP 5. ICMP 6. NAT 7. Routing Algorithms <ul style="list-style-type: none"> -Link state -Distance vector -Path vector 8. Routing Protocols <ul style="list-style-type: none"> - OSPF - RIP - BGP 9. Tutorial/Activity 	12	23-34
Link-layer	<ol style="list-style-type: none"> 1. Introduction and services 2. Error detection techniques <ul style="list-style-type: none"> - Parity, Checksum etc. 3. Error correction techniques <ul style="list-style-type: none"> - Hamming code 4. Multiple access protocols 5. ARP 6. Ethernet Frame format 7. Tutorial/Activity 	6	35-40

Text Book:

1. Computer Networks: A top-down approach by Forouzan, McgrawHill .

Reference Book:

1. Computer Networking: A top-down approach”, by Kurose and Ross, 5th Edition, Pearson
2. Computer Networks”, by A.S. Tannenbaum, 5th Edition, Pearson
3. Computer Networks: A systems approach”, by Peterson and Daive, 5th Edition, Morgan Kaufman