LESSON PLAN				
Name of the Paper, University Paper Code & Category (Core/Optional):	**Computer Networks Lab (PCC CS 692)**			
Academic Session:	**2024-25**	**Semester:**	6th	**Start Date: 10.2.2025**
Year:	Third (3rd)	**Program:**	UG	**End Date: 08.05.2025**
L: T: P	**0:0:3**	**Credit:**	**2**	
Course Taken by	**Mrs. SATABDWI SARKAR and Mr. SOUVIK MAJUMDAR**			

Course Outcome:

CO	Outcome	K Level
CO1	Demonstrate with Networking cables (CAT5, UTP), Connectors (RJ45, T-connector), Hubs, Switches.	K2
CO2	Explain the working and difference of various networking devices like Hub, Bridge, Network Switch, Router and Modem.	K2
CO3	Construct a client server socket programming using TCP and UDP approach in C and Java.	K3
CO4	Develop Flow control mechanisms like Stop &Wait and Sliding Window protocol of Data link Layer using C.	K3
CO5	Illustrate how to implement Error Detection Mechanism (Cyclic Redundancy Check) and error control mechanism like Selective Repeat, Go Back-N protocol in Data Link Layer using C.	K2
CO6	Illustrate the server setup configuration using different process like FTP, DNS, Tel-Net, NFS and concept of Firewall.	K2

Prerequisite Courses:

1. C Language
2. Java or Python Language and Linux variant OS

Gap Analysis: *(optional)*

Sl No.	Modules of the University Syllabus	Topic(s) to be included beyond the syllabus by means of Mirco Project
	NA	

Delivery/Instructional Methods: *(Retain the ones which are applicable)*

Sl No.	Description
1.	Chalk/Marker & Talk
2.	ICT tools (Smart Board, PPT etc.)
3.	Case Studies
4.	Flip Teaching
5.	Model Demo/Live Experiment
6.	Mini/Micro Projects by students

7.	Lab Demonstration by students

Assessment Instruments: *(Retain the ones which are applicable)*

Practical Continuous Assessments(PCAs)	○ Two practical continuous assessments (PCA1 and PCA2) each of 40 marks are taken during the entire semester. ○ Laboratory lesson plans are designed in such a suitable way so that the exercises or experiments thoroughly cover the COs of the respective practical/laboratory course. ○ The students are assessed based on their daily performances, lab file etc., following the rubrics of the laboratory.	Twice in each semester
End Semester Examination	○ A lab exam is conducted as per MAKAUT University schedule. The model examination is of total 60 marks and stipulated duration is 03 hrs. for each examination.	Once in each semester

Detailed Plan:

Experiment to be covered		Mapping with CO	Total No of Days*	Delivery/Instru-ctional Methods	Resource
Exp-1	i)Describe different guided and unguided transmission media. ii)Discuss straight cabling and Crossover cabling technique. iii) Describe different types of CAT cables and RJ 45 jack.	CO1	Total No. of Days=16 Start Date 10/02/25 End Date 08/05/25	1, 2,5	T1, E1
Exp-2	Describe various interconnecting devices (HUB, Repeater, Bridge, Switch, Router and Gateway) with NIC installation and working of that.	CO2		1,2,5	T1,E1
Exp-3	Write a java program to implement unidirectional socket program using TCP socket.	CO3		2,4	T3 R1 E2
Exp-4	Write a java program to implement bi-directional chat program using TCP socket.	CO3		2,4	T3 R1 E2

Exp-5	Write a java program to implement unidirectional socket program using UDP socket.	CO3		2,4	T3 R1 E2
Exp-6	Write a java program to implement bi-directional chat using UDP socket.	CO3		2,4	T3 R1 E2
Exp-7	Write a java program to implement multithread server using Java.	CO4		2,4	T3 R1 E2
Exp-8	Write a C program to implement stop and wait protocol.	CO4		2	T1 T2 E1
Exp-9	Write a C program to implement sliding window protocol.	CO5		2	T1 T2 E1
Exp-10	Write a C program to implement Error detection using CRC(Cyclic Redundancy Check).	CO5		2	T1 T2 E1
Exp-11	Write a C program to implement Selective repeat approach.	CO5		2	T1 T2 E1
Exp-12	Write a C program to implement Go-Back-N approach.	CO5		2	T1 T2 E1
Exp-13	Write down the steps to configure IP-address in a windows and Linux system.	CO6		2	R2
Exp-14	Write down the syntax description and output of the following Linux commands… ifconfig, ping, netstat -a, netstat -at, netstat -r, netstat -x, netstat -s, netstat -ic	CO6		2	R2

Note:* Total No of days required on the behalf of experiment. Mention the starting and ending dates (Approx) to complete the course

Total No of Practicals: 13

	Course Coordinator:	Module Coordinator:	Program Coordinator:	Head of the Department:
Signature with Date	Satabdwi Sarkar. 10/2/25			
	Aouvik Majumdar. 10/02/25			

Text Books:

T1. "Data Communications and Networking (4th Ed.)", A. Forouzan , TMH

T2. Hands-On Network Programming with C: Learn socket programming in C and write secure and optimized network code Kindle Edition by Lewis Van Winkle

T3. An Introduction to Network Programming with Java by Graba,Jan. T4. Linux Network Administrator's Guide by Olaf Kirch,Terry Dawson

Reference Books:

R1. Foundations of Python Network Programming: The comprehensive guide to building network applications with Python (Books for Professionals by Professionals) by John Goerzen, Tim Bower, Brandon Rhodes.

R2. "Network Programmability and Automation :: Skills for the Next- Generation Network Engineer" by Jason Edelman,Scott S. Lowe, Matt Oswalt.

E-Resource (Website link/E-book/Journal/MOOC etc.):

E1. https://nptel.ac.in/courses/106/105/106105081/
[Computer Networks by Prof. A. Pal, IIT Kharagpur]

E2. The Bits and Bytes of Computer Networking by Google Instructor Coursera.