



**SILIGURI INSTITUTE OF TECHNOLOGY**  
**ELECTRONICS & COMMUNICATION ENGINEERING**



# **COURSE FILE**

**6TH SEM, 3<sup>RD</sup> YEAR, 2021**

**SEC – A**

**PAPER DESCRIPTION : Computer Network**

**PAPER CODE : EC-602**

# Course File

Course Title: Computer Network.

Code: EC-602

Semester: 6<sup>TH</sup> Year: 3<sup>rd</sup>, 2021

Name of the Faculty: Prof. Anindita Sinha

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Class Schedule				
Lecture			Tutorial	Practical
Tuesday	Wednesday	Thursday	-	Tuesday
11:40 a.m -12:30 a.m	10:00 a.m -10:50 a.m	10:50 a.m- 11:40 a.m		2:10 p.m-4:40 p.m

Hours for meeting students:	
Monday	2:10 p.m- 5:00 p.m
Tuesday	2:10 p.m- 5:00 p.m
Other Days	1.30pm – 2:10pm or by appointment

## i) Course Objective

1. To describe how computer networks are organized with the concept of layered approach.
2. To explore the various layers and its related functions of OSI and TCP/IP Model.
3. To describe how the data or packets in the network are delivered.
4. To describe different routing strategies and protocols for packet transmission and its related applications

## ii) Course Outcomes

- i. After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

The student will be able to:

Outcomes		Target
EC 602.1	Understand and explore the basics concept of Data Communication and different network protocols, layered architecture and their applications. (B.T LEVEL-1)	60%
EC 602.2	Understand the elementary concepts based on data link layer protocols for error detection and correction. (B.T LEVEL-1)	60%

<b>EC 602.3</b>	Apply various network layer techniques for designing subnets and supernets and also analyse packet flow on basis of routing protocols. (B.T LEVEL-3)	60%
<b>EC 602.4</b>	To administrate a network and flow of information further students can able to understand the concepts of mobile or adhoc networks. (B.T LEVEL-4)	60%
<b>EC 692.1</b>	Have a working knowledge of datagram and internet socket programming.	70%

- ii. Once the student has successfully complete this course, he/she must be able to answer the following questions or perform / demonstrate the following:

Sl.	Question	
1.	Explain different type of networks.	CO1
2.	Define redundancy?	CO1
3.	Define topology and explain and explain the topologies of networks?	CO1
4.	Explain the transmission modes in details?	CO2
5.	Define network?	CO3
6.	How performance is improved in CSMA/CD protocol compared to CSMA protocol? Explain	CO2
7.	How CSMA/CA differ from CSMA/CD .explain in brief?	CO2
8.	Explain in details of ICMP, IGMP?	CO3
9.	Explain uni-cast routing protocols in details?	CO3
10.	Explain in detail about process to process delivery?	CO4

### iii) Topic/Unit/Chapter Layout

Topic/Unit/Chapter	Lecture Hours	Laboratory hours
I. Introduction; Data communications: components, data representation (ASCII,ISO etc.), direction of data flow (simplex, half duplex, full duplex); network criteria, physical structure (type of connection, topology), categories of network (LAN, MAN,WAN); Internet: brief history, Protocols and standards; Reference models: OSI reference model, TCP/IP reference model, their comparative study. Overview of data(analog & digital), signal(analog & digital), transmission (analog & digital) & transmission media (guided & unguided); Circuit switching: time division & space division switch, TDM bus;	10	

Telephone Network;		
II. Types of errors, framing(character and bit stuffing), error detection & correction methods; Flow control; Protocols: Stop & wait ARQ, Go-Back- N ARQ, Selective repeat ARQ, HDLC; Medium Access sub layer: Point to Point Protocol, LCP, NCP, Token Ring; Reservation, Polling, Multiple access protocols: Pure ALOHA, Slotted ALOHA, CSMA, CSMA/CD, CSMA/CA Traditional Ethernet, fast Ethernet(in brief);	10	
III. Network layer: Internetworking & devices: Repeaters, Hubs, Bridges, Switches, Router, Gateway; Addressing : IP addressing, subnetting; Routing : techniques, static vs. dynamic routing , Unicast Routing Protocols: RIP, OSPF, BGP; Other Procols: ARP, IP, ICMP, IPV6;. Transport layer: Process to Process delivery; UDP; TCP; Congestion Control: Open Loop, Closed Loop choke packets; Quality of service: techniques to improve QoS: Leaky bucket algorithm, Token bucket algorithm,	12	
IV. Introduction to DNS, SMTP, SNMP, FTP, HTTP & WWW; Security: Cryptography (Public, Private Key based), Digital Signature, Firewalls. Modern topics: ISDN services & ATM, DSL technology, Cable Modem: Architecture & Operation in brief Wireless LAN: IEEE 802.11, Introduction to blue-tooth.	10	

#### iv) Textbooks

1. B. A. Forouzan – “Data Communications and Networking (3rd Ed.)” – TMH
2. A. S. Tanenbaum – “Computer Networks (4th Ed.)” – Pearson Education/PHI
3. W. Stallings – “Data and Computer Communications (5th Ed.)” – PHI/ Pearson Education
4. Zheng & Akhtar, Network for Computer Scientists & Engineers, OUP
5. Black, Data & Computer Communication, PHI
6. Miller, data Communication & Network, Vikas
7. Miller, Digital & Data Communication, Jaico
8. Shay, Understanding Data Communication & Network, Vikas

#### Reference Books:

1. Kurose and Rose – “Computer Networking -A top down approach featuring the internet” – Pearson Education
2. Leon, Garica, Widjaja – “Communication Networks” – TMH
3. Walrand – “Communication Networks” – TMH.
4. Comer – “Internetworking with TCP/IP, vol. 1, 2, 3 (4th Ed.)” – Pearson Education/PHI

#### v) Pre-requisites:

Students have pre-requisites knowledge of digital communication and digital electronics.

#### (vi) Evaluation Scheme

##### 1) Theory

Evaluation Criteria	Marks
Internal Exam*	15

Quiz / assignment	10
Attendance	5
University Exam/External Exam	70
Total	100

\* Two internal examinations are conducted; based on those two tests, average of them are considered in a scale of 15.

## 2) Laboratory

Expt. No.	Experiment Name	Schedule
1	Study of different types of Network cables and Practically implement the cross-wired cable and straight through cable using clamping tool.	3HRS.
2	Study of Network Devices in Detail.	3 HRS.
3	Study of network IP.	3 HRS.
4	Connect the computers in Local Area Network.	3 HRS.
5	Study of basic network command and Network configuration commands.	3 HRS.
6	Connecting a Switch	3 HRS.
7	Interpreting Ping and Traceroute Output	3 HRS.
8	Implementing an IP Addressing Scheme	3 HRS.
9	Configuring Static and Default Routes	3 HRS.
10	Examining Network Address Translation (NAT)	3 HRS.
11	Planning Network-based Firewalls	3 HRS.
12	Chatting message using Client server programming	3 HRS.

### Course target attainment levels:

Attainment Level	Inference
Attainment Level 1	40% of the students have attained more than the target level of that CO
Attainment Level 2	50% of the students have attained more than the target level of that CO
Attainment Level 3	60% of the students have attained more than the target level of that CO

Overall Course Attainment Target = 70% of the students will get "A" Grade

Target has been set on the basis of last year's performance / result by the students, student quality this year and difficulty level of the course.

### University Grading System:

Grade	Marks
O	90% and above
E	80 – 89.9%
A	70 – 79.9%

B	60 – 69.9%
C	50 – 59.9%
D	40 – 49.9%
F	Below 40%

### (vi) Mapping of Course Outcomes and Program Outcomes:

Course Outcomes	Program Outcomes												PSOs	
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	1.	2.
CO1	2	-	-	-	-	-	-	-	-	-	-	-	1	-
CO2	2	-	-	-	-	-	-	-	-	-	-	-	1	-
CO3	2	-	-	-	-	-	-	-	-	-	-	-	1	-
CO4	2	-	1	-	-	1	-	-	2	-	-	2	1	1
CO5	2	-	1	-	-	1	-	-	2	-	-	2	1	1

1 = courses in which the student will be exposed to a topic (BT level 1& 2)

2 = courses in which students will gain competency in that area (BT level 3-4)

3= courses in which students will master that skill (BT level 5-6)

- CO1 to CO5 **partially** satisfies the application of knowledge of mathematics, science, engineering fundamentals to the solution of complex engineering problems (**PO1**).
- CO4 and CO5 minimally satisfies the Design solutions for design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, & the cultural and societal, environmental consideration(**PO3**).
- CO4 and CO5 minimally satisfies for the students to apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice (**PO6**).
- CO4 & CO5 **partially** satisfies for the students to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings (**PO9**).
- CO4 & CO5 **partially** satisfies for the students to recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change (**PO12**).

### (vii) Delivery Methodology

Outcome	Method	Supporting Tools	Demonstration
CO1	Structured (Partially Supervised Whole-Class Grouping)	Online Class material, like YouTube's video, NPTEL lectures, PPT presentation	Discussing different types of protocols, layers, and its related architecture.
CO2	Structured (Partially Supervised Whole-Class Grouping)	Online Class material, like YouTube's video,	<b>Understanding</b> the data flow procedure using

		NPTel lectures, PPT presentation	collision and without using collision protocols.
CO3	Structured (Partially Supervised Whole-Class Grouping)	Online Class material, like YouTube's video, NPTel lectures, PPT presentation	<b>Studying</b> the basics of IP addressing and its related application in routing.
CO4	Structured (Partially Supervised Whole-Class Grouping)	Online Class material, like YouTube's video, NPTel lectures, PPT presentation	Understanding the Domain name concept and explain the architecture of Bluetooth.
CO5	Structured (Partially Supervised Independent work)	MS-DOS Prompt and Internet Connection and JAVA	Demonstrate each and every function of computer network and routing.

### (viii) Assessment Methodology

Outcome	Assessment Tool	Specific Question/activity aligned to the Outcome
CO1	QUIZ	<p>1. Protocols are?</p> <p>(a) Agreements on how communication components and DTE's are to communicate (b) Logical communication channels for transferring data. (c) Physical communication channels used for transferring data (d) None of above</p> <p>2. Computer Network is</p> <p>A. Collection of hardware components and computers  B. Interconnected by communication channels  C. Sharing of resources and information  D. All of the Above</p>
	Assignment	1. State the functions of MAC?.
		2. How performance is improved in CSMA/CD protocol compared to CSMA protocol? Explain?.
CO2	Internal Test	<p>1. Each IP packet must contain</p> <p>A. Only Source address  B. Only Destination address  C. Source and Destination address  D. Source or Destination address</p>

		<p>2. Bridge works in which layer of the OSI model?</p> <p>A. Application layer B. Transport layer C. Network layer D. Data link layer</p>
		<p>3. Explain in details of ICMP,IGMP? 4. Explain network layer logical addressing?</p>
CO3	QUIZ & Assignment	<p>1. Router operates in which layer of OSI Reference Model?</p> <p>A. Layer 1 (Physical Layer) B. Layer 3 (Network Layer) C. Layer 4 (Transport Layer) D. Layer 7 (Application Layer)</p> <p>2. Each IP packet must contain</p> <p>A. Only Source address B. Only Destination address C. Source and Destination address D. Source or Destination address</p>
	Internal Test	<p>3. Explain HTTP and FTP 4. Explain Classless addressing.</p>
CO4	Lab	<p>1. Show different types of media connections using VLAB. 2. Show the working of ping command and traceroute command. 3. Show the Domain name of an unknown IP address. 4. Show the socket programming of Chatting message between Server and Client.</p>

### (ix) A. Weekly Lesson Plan

Week	Lectures	Tutorial	Practical	Assignment
1	I. Introduction; Data communications: components, data representation (ASCII,ISO etc.), direction of data flow (simplex, half duplex, full duplex); network criteria, physical structure (type of connection, topology), categories of network (LAN, MAN,WAN);			
2.	Internet: brief history, Protocols and standards; Reference models: OSI reference model, TCP/IP reference model,			



	their comparative study. Overview of data(analog & digital), signal(analog & digital), transmission (analog & digital) & transmission media (guided & unguided);			
3.	Circuit switching: time division & space division switch, TDM bus; Telephone Network;			
4.	Types of errors, framing(character and bit stuffing), error detection & correction methods; HDLC; Medium Access sub layer,;			
5.	Flow control; Protocols: Stop & wait ARQ, Go-Back- N ARQ, Selective repeat ARQ,			
6.	Multiple access protocols: Pure ALOHA, Slotted ALOHA, CSMA, CSMA/CD, CSMA/CA Traditional Ethernet, fast Ethernet(in brief);			
7.	Network layer: Internetworking & devices: Repeaters, Hubs, Bridges, Switches, Router, Gateway; RIP, OSPF, BGP;Addressing : IP addressing, subnetting; Other Procols: ARP, IP, ICMP, IPV6			
8	Routing : techniques, static vs. dynamic routing , Unicast Routing Protocols:			
9	Transport layer: Process to Process delivery; UDP; TCP; Congestion Control: Open Loop, Closed Loop choke packets; Quality of service: techniques to improve QoS: Leaky bucket algorithm, Token bucket algorithm,			
10	Introduction to DNS, SMTP, SNMP, FTP, HTTP & WWW; Security: Cryptography			
11	Digital Signature Firewalls. Modern topics: ISDN services & ATM, DSL technology, Cable Modem:			
12.	Architecture & Operation in brief Wireless LAN: IEEE 802.11, Introduction to blue-tooth.			

## B. Daily Lesson Plan

Lecture	TOPIC/UNIT/ CHAPTER	Plan date with day	Execution date	Details of home work/assignment/mini project/ICT used/other	Details of topics that are beyond syllabus (if any)	Remarks
1	INTRODUCTION TO DATA COMMUNICATION, COMPUTER NETWORK	8.4.21	20.4.21			Google Meet
2	<b>Data Communications:</b> Components: Different Networks: LAN,MAN ,WAN	13.4.21	21.4.21			Google Meet
3	Components and Categories and different types of Connections	20.4.21	22.4.21			Google Meet
4	Topologies-STAR, MESH, RING, BUS, HYBRID	21.4.21	27.4.21			Google Meet
5	Protocols and Standards – ISO / OSI MODEL	22.4.21	28.4.21			Google Meet
6	Discussion on Different Layers with practical example	27.4.21	29.4.21			Google Meet
7	Example Networks such as ATM, Frame Relay	28.4.21	4.5.21			Google Meet
8	ISDN Physical layer: Transmission modes	29.4.21	5.5.21			Google Meet
9	Multiplexing-TDM, FDM	4.5.21	6.5.21			Google Meet
10	Transmission Media	5.5.21	7.5.21			Extra Class has taken
11	Switching, Circuit Switched	6.5.21	11.5.21			Google Meet

	Networks					
12	Error – Detection and Correction-Framing	11.5.21	12.5.21			Google Meet
13	Parity – LRC– CRC Hamming code, Flow and Error Control.	12.5.21	13.5.21			Google Meet
14	Noiseless Channels, Noisy Channels	13.5.21	18.5.21			Google Meet
15	HDLC, Point to Point Protocols, Flow Control,	18.5.21	19.5.21			Google Meet
16	111 Medium Access sub layer: ALOHA	19.5.21	20.5.21			Google Meet
17.	Revision Class-I	20.5.21	21.5.21			Google Meet
<b>INTERNAL-1</b>						24-26 th May-Due to 1 <sup>st</sup> Internal examination, there will be no classes.
17	LAN– Ethernet IEEE 802.3	1.6.21	22.5.21			Google Meet
18	IEEE 802.5 – IEEE 802.11	2.6.21	1.6.21			Google Meet
19	CSMA/CA and CSMA/CD	3.6.21	2.6.21			Google Meet
20	IP addressing-different classes	8.6.21	3.6.21			Google Meet
21	Details discussion in IP addressing-IPV4 and IPV6	9.6.21	8.6.21			Google Meet
22	Subnetting and related maths	10.6.21	9.6.21			Google Meet
23	Supernetting and related maths	15.6.21	10.6.21			Google Meet
24	Routing Process-Unicast Routing and Broadcast Routing	16.6.21	15.6.21			Google Meet

25	BGP, RIP, OSPF	17.6.21	16.6.21			Google Meet
26	<b>Transport Layer:</b> Process to Process Delivery	22.6.21	17.6.21			Google Meet
27	UDP and TCP protocols	23.6.21	22.6.21			Google Meet
28	Data Traffic, Congestion	24.6.21	23.6.21			Google Meet
29	Congestion Control,	1.7.21	24.6.21			Google Meet
30	QoS, Integrated Services	6.7.21	1.7.21			Google Meet
31	Differentiated Services	7.7.21	7.7.21			Google Meet
32	Domain name space	8.7.21	14.7.21			Google Meet
33	DNS in internet, FTP, www, HTTP	13.7.21	15.7.21			Google Meet
34	SNMP and SMTP	14.7.21	16.7.21			Extra Class
35	Revision Class-II	15.7.21	17.7.21			
<b>INTERNAL-2</b>						20-23 th July-Due to 1 <sup>st</sup> Internal examination, there will be no classes.
36	Practice Class-I	27.7.21	18.7.21			
37	Practice Class-II	28.7.21	29.7.21			

## (x) Teaching Strategy / Method

- Assembly language programming
- Interactive question-answer session
- Arrangement of MCQ/quiz

## (xa) Strategy to support weak students

- Extra Doubt clearing session beyond class hour
- Assignment
- Weak students grouped with good students

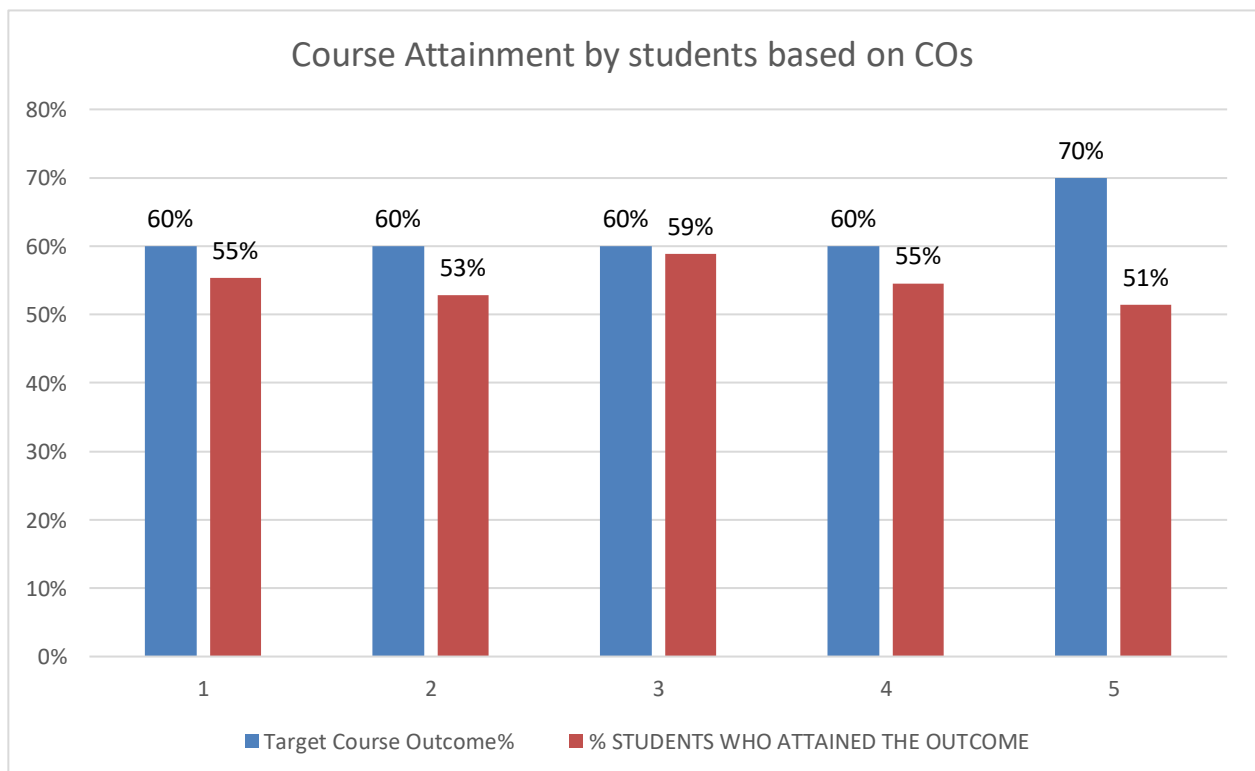
## (xb) Strategy to encourage bright students

- High level assignment

## (xc) Efforts to keep students engaged

- Asking students to share idea what they learned with fellow students.
- Small project

## (xi) Analysis of Students performance in the course



- 55% students have attained the set target of 60% marks for CO1
- 53% students have attained the set target of 60% marks for CO2
- 59% students have attained the set target of 60% marks for CO3
- 55% students have attained the set target of 60% marks for CO4

- 51% students have attained the set target of 70% marks for CO5

### (xii) Analysis of Students performance in the course (INTERNAL & university results)

Record of Attainment Level of A Course through University and Internal Assessments					
	Target Course Outcome%	TOTAL STUDENTS	TOTAL STUDENT WHO ATTAINED OUTCOME	% STUDENTS WHO ATTAINED THE OUTCOME	Attainment Level
CA	60%	29	16	55%	1
University	70	29	29	100%	3
Overall Attainment of Course Outcome=70% OF University +30% OF CA					2

- 55% students have attained the set target of 60% marks for Internal Exams.

### (xiv) Teacher Self-Assessment (at the completion of course)

From the analysis of the results obtained it can be seen that set targets for the course outcome have been achieved successfully by the students. Since this subject will help them for designing systems based on LAN, different topologies. More emphasis must be given for developing theoretical concept and different programming techniques on client programme.

### (xiv) Recommendations/Suggestions for improvement by faculty

- More emphasis should be given to clear the concepts related to Transport Layer.
- MCQ/viva may be arranged after the completion of each module in the syllabus.

## INTERNAL ASSESMENT RECORD

Subject with code: Computer Network (EC 602)

Section: A Semester: 6<sup>th</sup> Discipline: Electronic & Communication Engg.

Sl.	Roll No.	Name	Attendance		Internal Examination			Assignment / Quiz	Total
			Total	Marks	1 <sup>st</sup>	2 <sup>nd</sup>	Avg.		
1	11900318004	Tenzing Wangchuk Bhutia	35	5	26	27	27	9	23

2	11900318005	Tamoghna Mondal	21	3	15	28	22	7	17
3	11900318006	Sweta Jaiswal	39	5	26	26	26	9	23
4	11900318007	Sushmita Mukherjee	31	4	23	20	26	9	21
5	11900318008	Sumit Kumar	35	4	22	25	26	10	22
6	11900318009	Suman Chandra Dey	21	3	17	17	17	7	15
7	11900318010	Subhajit Sen	27	3	21	26	26	7	19
8	11900318011	Subhajit Dey	40	5	22	30	26	10	23
9	11900318012	Srishti Pal	41	5	24	27	25	10	23
10	11900318013	Soumyadeep Halder	34	4	22	22	26	9	22
11	11900318014	Soumyadeep Das	25	3	25	20	27	8	20
12	11900318015	Souhardya Paul	34	4	24	20	26	8	21
13	11900318016	Shreya Chattopadhyay	39	5	23	23	26	10	23
14	11900318017	Shayantan Kumar Roy	26	4	20	25	25	9	21
15	11900318018	Shakchhi Lama	39	5	26	25	27	10	24
16	11900318019	Satwik Chatterjee	38	5	23	24	23	10	22
17	11900318020	Santosh Shrivastav	34	5	23	25	26	9	23
18	11900318021	Sagnik Ghosh	22	3	12	23	18	8	16
19	11900318023	Sagarnil Chakraborty	22	3	19	21	21	8	18
20	11900318024	Rudra Das Mandal	21	3	22	22	22	7	18
21	11900318025	Roshan Kumar Vats	21	3	20	23	25	7	19
22	11900318027	Rinku Roy	35	5	23	24	25	9	22
23	11900318028	Rahul Shah	23	3	21	22	25	9	20
24	11900318029	Rahul Roy	42	5	27	25	29	10	24
25	11900318030	Priyanka Kundu	41	5	27	25	27	10	23
26	11900318031	Pritam Sen	25	3	23	24	26	8	20
27	11900318032	Pritam Barman	39	4	23	27	27	9	22
28	11900318033	Pratim Kumar Das	40	5	22	23	25	10	22
29	11900318034	Nur Hasan	42	5	21	25	25	10	22

## ATTENDANCE SHEET (Practical)

Subject with code: Computer Network Lab (EC-692)

Semester : 6<sup>TH</sup> Sem, 2021

Discipline: ECE

Sl	Name	Roll No.	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
			4.5.2021	11.5.2021	18.5.2021	25.5.2021	8.6.2021	15.6.2021	22.6.2021	29.6.2021	6.7.2021	6.7.2021	13.7.2021	13.7.2021	
1.	11900318004	TENZING WANGCHUK	1	1	1	1	1	0	1	1	1	1	1	1	11

2.	11900318005	TAMOGHNA MONDAL	0	1	0	1	1	1	1	0	1	1	0	0	6
3.	11900318006	SWETA JAISWAL	1	1	0	1	1	1	1	1	1	0	1	1	10
4.	11900318007	SUSMITA MUKHERJEE	0	0	1	1	1	1	1	0	1	1	0	0	7
5.	11900318008	SUMIT KUMAR	1	1	0	1	1	1	1	1	1	1	0	1	10
6.	11900318009	SUMAN CHANDRA DEY	0	0	0	1	0	0	1	0	1	1	0	0	4
7.	11900318010	SUBHAJIT SEN	0	0	1	0	1	1	0	1	1	0	0	0	5
8.	11900318011	SUBHAJIT DEY	1	1	1	1	1	1	1	1	1	1	0	0	10
9.	11900318012	SHRISHTI PAL	1	1	1	1	1	1	1	1	1	1	1	1	12
10.	11900318013	SOUMYADEEP HALDER	1	1	0	0	1	1	1	1	1	0	0	1	8
11.	11900318014	SOUMYADEEP DAS	0	0	0	1	1	1	0	1	1	1	1	1	8
12.	11900318015	SOUHARDYA PAUL	1	1	1	1	1	0	0	1	1	1	1	1	10
13.	11900318016	SHREYA CHATTOPADHYAY	1	1	0	1	1	1	1	0	0	0	1	1	8
14.	11900318017	SHAYANTAN KUMAR RAY	0	1	0	1	1	1	1	1	1	1	1	1	10
15.	11900318018	SAKSHI LAMA	1	1	0	1	1	1	1	1	1	1	0	0	9
16.	11900318019	SATWIK CHATTERJEE	1	1	1	1	1	1	1	1	1	1	1	1	12
17.	11900318020	SANTOSH SRIVASTAVA	0	1	1	1	1	1	1	0	1	0	0	0	7
18.	11900318021	SAGNIK GHOSH	0	0	0	1	0	1	1	1	0	0	0	0	4
19.	11900318023	SAGARNIL CHAKRABORTY	0	0	0	0	1	0	1	1	0	0	1	0	4
20.	11900318024	RUDRA DAS MANDAL	0	1	0	0	0	1	1	0	0	0	1	1	5
21.	11900318025	ROSHAN KR VATS	1	0	1	1	1	0	0	1	1	0	0	0	6
22.	11900318027	RINKU ROY	1	1	1	1	1	1	1	1	0	1	1	1	11
23.	11900318028	RAHUL SHAH	0	1	0	1	0	1	0	0	0	0	1	1	5
24.	11900318029	RAHUL ROY	1	1	1	1	1	1	1	1	1	1	1	1	12
25.	11900318030	PRIYANKA KUNDU	1	1	1	1	1	1	1	1	1	1	1	1	12
26.	11900318031	PRITAM SEN	1	0	1	0	0	0	0	1	1	1	0	0	5
27.	11900318032	PRITAM BARMAN	1	1	0	1	1	1	0	1	0	0	1	1	8
28.	11900318033	PRATIM KUMAR DAS	1	1	1	1	1	1	1	1	1	1	1	1	12
29.	11900318034	NUR HASAN	1	1	1	1	1	0	1	1	1	1	1	1	11






**NAME WITH ROLL NO.s OF STUDENT WHOSE ACADEMIC PERFORMANCE IS NOT SATISFACTORY**

Sl.	Roll No.	Name of Student	Remedial measures taken by teacher
1.	11900318009	SUMAN CHANDRA DEY	<ul style="list-style-type: none"> <li>• Preparing them by solving previous year WBUT question papers</li> <li>• Additional doubt clearing sessions</li> <li>• Providing extra assignments</li> <li>• Highlighting important and frequently asked questions</li> </ul>
2.	11900318015	SOUHARDYA PAUL	
3.	11900318024	RUDRA DAS MANDAL	
4.	11900318025	ROSHAN KR VATS	

## CERTIFICATE

I, the undersigned, have completed the course allotted to me as shown below

Sl. No.	Semester	Subject with Code	Total Units/ Chapters	Remarks
1.	6th	Computer Network	12	

Date :7.08.2021

**Signature of Faculty**

<b>Submitted to HOD</b>
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<b>Certificate by HOD</b>
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I, the undersigned, certify that.....has completed the course work allotted to him/ her satisfactorily/ not-satisfactorily.
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Date :
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<b>Signature of HOD</b>
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<b>Submitted to Principal/Director</b>
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Date :
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<b>Signature of Principal/Director</b>
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