Department of ECE

Details of Lesson Plan

S.No.	Particulars	Details
1.	Course Name	Computer Networks
2.	Course Code	ECE-603
3.	Academic Year	2023-2024
4.	Semester	6th
5.	Number of Lesson plans	40
6.	Faculty Assigned	Ms Gurpreet Raina

Faculty Signature

Lesson Plan No. 1	**Course Name: C**omputer network **Topic**: Intro to Computer Networks	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. Understand the basic concepts of computer networks b. Able to learn uses of computer network. c. Able to understand the role of networking in communication.
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions What is a network? Give example of any network in your surrounding? - Introduce the formal definition of terminologies used in networking - Highlight the important characteristics of the networks. 2. **Introduction to computer network** (30 minutes) a. Computer network b. Internet & Network c. Types of Network d. Components Of Computer Network e. Uses Of Computer Network f. Features Give examples to illustrate the present day networks in use from a user-perspective. 3. Exercise (5 minutes) – Ask basic questions based on the topic discussed
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading https://youtu.be/lnU-Zw3NEEQ?list=PLbRMhDVUMngf-peFloB7kyiA40EptH1up Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Reall the role of networking in today's communiation. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 2	**Course Name: C**omputer network **Topic** : Types of Networks	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. Understand the architecture of computer network concepts for the computer network and goal of network.
Teaching Aids (if any)	a. Chalk & Talk b. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions What is a client ? - What are uses of computer networks networking - Highlight the important merits /demerits of the networks. 2. **Computer architecture** (30 minutes) a. Types of Computer network used Computer network b. Peer-To-Peer network c. Client/Server network d. Uses Of Computer Network e. Features 3. Exercise (5 minutes) – Ask basic questions based on the topic discussed
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading/Links https://youtu.be/lnU-Zw3NEEQ?list=PLbRMhDVUMngf-peFloB7kyiA40EptH1up Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Summarise the key points. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 3	**Course Name: C**omputer network **Topic** : Data Communication	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. able to understand about data communications and networking.
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions What are different types of data? What is difference between local communication and data communication? 2. **Data Communication** (30 minutes) a, Five components of data communication b. Fundamental characteristics - Delivery - Timeliness - Jitter - Accuracy 3. Data Representation 4. Exercise (5 minutes) – Ask basic questions based on the topic discussed.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading https://youtu.be/29Qdz0FmvmQ?list=PLbRMhDVUMngf-peFloB7kyiA40EptH1up https://youtu.be/b6f9vh3cd6w?list=PLbRMhDVUMngf-peFloB7kyiA40EptH1up Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Reall different types of data. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 4	**Course Name: C**omputer network **Topic** : Data communication	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. understand the basic of serial and parallel data communication b. Understand the concept of Synchronous and asynchronous communication.
Teaching Aids (if any)	a. ICT
Teaching Development	a. **Introduction** (5 minutes) b. What is data communication c. What kind of data can be transmitted? d. What is serial & parallel communication. e. What makes synchronous communication useful? f. What is asynchronous communication **Data Communication** (30 minutes) g. Difference h. Serial & parallel Transmission i. Synchronous and Asynchronous Transmission j. Difference Exercise (5 minutes) – Give examples of synchronous communication & asynchronous communication
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading https://www.techsmith.com/blog/synchronous-vs-asynchronous-communication/ 3. Video link https://youtu.be/swtH_okidQc?list=PLUtfVcb-iqn8dG1-Cn7NTEdILR3hRVgcN https://youtu.be/swtH_okidQc?list=PLUtfVcb-iqn8dG1-Cn7NTEdILR3hRVgcN Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Reall key points of topic covered Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 5	**Course Name: C**omputer network **Topic** : Network Devices	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. able to understand communication between two devices and how data flow. b. Understand different types of switching techniques.
Teaching Aids (if any)	a. ICT
Teaching Development	1. Introduction (5 minutes) - Ask questions - What are the basic hardware used to connect nodes in a network - What is switching ? 2. Network Devices and Switching Techniques (30 minutes) a. Types of Network Devices - NIC - Routers - Hub - bridges - switches - Repeaters b. Switching in network c. Data flow (simplex, half-duplex, and full-duplex) 3. Exercise (5 minutes) – Ask basic questions based on the topic discussed Use Nearpod to collect responses and discuss the answers.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading/links https://youtu.be/teWamog0iuk Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 6	**Course Name: C**omputer network **Topic** : Network Classification	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. able to understand types of area networks. b. Understand different types of switching techniques.
Teaching Aids (if any)	a. Chalk & Talk b. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - What is a server in a computer network ? - A computer lab is an example of which types of network ? 2. **Types of Network** (30 minutes) a. LAN b. MAN c. WAN d. PAN e. SAN 3. Exercise (5 minutes) – Ask basic questions based on the topic discussed Use Nearpod to collect responses and discuss the answers.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading/linkshttps://youtu.be/NSHj9BLnhj0?list=PL32DBC269EF768F74 3. Video: https://youtu.be/29Qdz0FmvmQ?list=PLbRMhDVUMngf-peFloB7kyiA40EptH1up Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Questionaire on key features of each classification. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 7	**Course Name: C**omputer network **Topic** : Network Classification	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. Understand the classification of different types of network based on physical structure.
Teaching Aids (if any)	a. PPTS
Teaching Development	1. **Introduction** (5 minutes) - Ask questions How the structure of a network can be defined ? - How the components are connected together in a network ? 2. **Types of topologies** (30 minutes) a. Bus b. Ring c. Star d. Mesh e. Tree f. Hybrid g. Advantages & disadvantages 3. Exercise (5 minutes) – Ask basic questions based on the topic discussed Draw the structure and discuss the merits & demerits.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading https://youtu.be/NSHj9BLnhj0?list=PL32DBC269EF768F7 Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Enlist the features and compare the different structure. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 8	**Course Name: C**omputer network **Topic**: OSI Reference Model	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. Understand reference model of computer network. b. Able to acquire fundamental knowledge of working of different layers.
Teaching Aids (if any)	a. PPTs b. Animated Video
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - How the data transmit across the globe? - What do you think the network Models are used for? 2. **Reference Models** (30 minutes) a. Types of network Models b. OSI reference Model c. Different layers and their utility d. Functionality of layers. 3. Exercise (5 minutes) – Ask basic questions based on the topic discussed Draw the model layout Name layers and give at least one function of each.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading/link 3. Video link https://youtu.be/-6Uoku-M6oY
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Mcqs based test. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 9	**Course Name: C**omputer network **Topic**: OSI Reference Model	**Course No.: ECE-603**

Objectives	a. Understand reference model of computer network. b. Able to acquire fundamental knowledge of working of different layers.
Teaching Aids (if any)	a. PPTs
Teaching Development	1. **Introduction** (5 minutes) - Ask questions How many layers are here in OSI Model Data in physical layer is in which form? In which layer router is used? What is the need of the model in networking? 2. **Reference Models** (30 minutes) Software Layers of OSI Model Session layer Presentation layer Application layer Flow of data in OSI model Advantages of OSI Model Features Functions 3. Exercise (5 minutes) – Ask basic questions based on the topic discussed. Explain OSI Model in nutshell. Reall responsibility of each layer.
Closure	Summarize the Lesson Learning Outcomes and get affirmation from students on these. Suggested Reading/link https://youtu.be/-6Uoku-M6oY Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Ask questions on layered structure of OSI Model. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 10	**Course Name: C**omputer network **Topic**: TCP/IP Model	**Course No.: ECE-603**

Objectives	a. Understand TCP/IP model of computer network. b. Able to acquire fundamental knowledge of working of different layers of TCP/IP Model.
Teaching Aids (if any)	a. PPTs
Teaching Development	1. **Introduction** (5 minutes) - Ask questions What is full form of IP? Data in physical layer is in which form? In which layer router is used? What is the need of the model in networking? 2. **TCP/IP Models** (30 minutes) Difference between TCP & IP How TCP/IP works Layers of TCP/IP Model Physical layer Data Link Layer Internet Layer Transport Layer Application layer Flow of data Features Functions 3. Exercise (5 minutes) – Ask basic questions based on the topic discussed. Compare OSI & TCP Model in nutshell.
Closure	Summarize the Lesson Learning Outcomes and get affirmation from students on these. Suggested Reading/link https://youtu.be/a-zYm2KzqHQ Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss.

	2. Ask questions on layered structure of OSI Model. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 11	**Course Name: C**omputer network **Topic**: TCP/IP Model	**Course No.: ECE-603**

Objectives	a. Understand TCP/IP model of computer network. b. Able to acquire fundamental knowledge of working of different layers of TCP/IP Model.
Teaching Aids (if any)	a. PPTs
Teaching Development	1. **Introduction** (5 minutes) - Ask questions What is full form of IP? How does IP protect data? Give one difference between flow control & Error control? 2. **TCP/IP & OSI Models** (30 minutes) Comparison of TCP and OSI Model Flow of data Common Functions Other internet protocols 3. Exercise (5 minutes) – Ask basic questions based on the topic discussed. Diagrammatic comparison of the layered structure of both models.
Closure	Summarize the Lesson Learning Outcomes and get affirmation from students on these. Suggested Reading/link https://youtu.be/a-zYm2KzqHQ Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Enlist features of Model. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 12	**Course Name: C**omputer network **Topic**: TCP/IP Model	**Course No.: ECE-603**

Objectives	a. Understand TCP/IP model of computer network. b. Able to acquire fundamental knowledge of working of different layers of TCP/IP Model.
Teaching Aids (if any)	a. PPTs
Teaching Development	1. **Introduction** (5 minutes) - Ask questions How may layer are there in TCP Model? 2. **TCP/IP & OSI Models** (30 minutes) Comparison of TCP and OSI Model Other internet protocols 3. Exercise (5 minutes) – Ask basic questions based on the topic discussed. Diagrammatic comparison of the layered structure of both models.
Closure	Summarize the Lesson Learning Outcomes and get affirmation from students on these. Suggested Reading/link https://youtu.be/a-zYm2KzqHQ Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Poll Quiz. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 13	**Course Name: C**omputer network **Topic**: Data Transmission	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. Able to understand the concept of line encoding. b. Analyse different types of encoding schemes
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - Why encoding is required in data communications? 2. **Encoding techniques** (30 minutes) a. Types of Encoding (NRZ, RZ, Manchester etc) b. Encoding and its types c. characteristics of enoding, 3. Exercise (5 minutes) – Practice of Encoding of a given bit pattern.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading 3. https://youtu.be/ifgs0uypC78 Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 14	**Course Name: C**omputer network **Topic**: Types of encoding	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. Able to understand the concept of line encoding. b. Analyse different types of encoding schemes
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - Why encoding is required in data communications? 2. **Encoding techniques** (30 minutes) a. Types of Encoding (NRZ, RZ, Manchester etc) b. Encoding and its types c. characteristics of enoding, 3. Exercise (5 minutes) – Practice of Encoding of a given bit pattern.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading 3. https://youtu.be/ifgs0uypC78 Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 15	**Course Name: C**omputer network **Topic**: Transmission Media	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. Able to understand different types of transmission media.
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - What is main functionality of the transmission media? **2 Transmission media** (30 minutes) a. Types of transmission Media b. Classes of Transmission Media, Guided or wired Media: Coaxial Cable, Twisted Pair, Optical Fiber. c. Some factors need to be considered for designing the transmission media: Bandwidth Interference d. Advantages & disadvantages 2. Exercise (5 minutes) – Encoding of a given bit pattern.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading 3. https://youtu.be/y7v3EAJsWXA?list=PLUtfVcb-iqn8dG1-Cn7NTEdILR3hRVgcN Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 16	**Course Name: C**omputer network **Topic**: Transmission Media	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. Able to familiar to different types of transmission media.
Teaching Aids (if any)	a. Chalk & Talk b. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - What is main functionality of the transmission media? a. Types of transmission Impairments (30 minutes) Attenuation Noise Distortion b. Unguided or wireless media: - Radio Waves, Infra-Red, Microwave, Satellite, Light wave, unguided media (Wireless) c. Some factors need to be considered for designing the transmission media: Bandwidth Interference d. Advantages & disadvantages 2. Exercise (5 minutes) – Encoding of a given bit pattern.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading 3. https://youtu.be/hKq1tYlVxdQ?list=PLUtfVcb-iqn8dG1-Cn7NTEdILR3hRVgcN Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 17	**Course Name: C**omputer network **Topic**: Switching Mechanism	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. understand the concept of switch and switching mechanism b. able to know how to establish connections
Teaching Aids (if any)	a. Chalk & Talk b. ICT
Teaching Development	1. **Introduction** (5 minutes) - What do you mean by switching in general? - To which level of OSI model switch is used? - Can we call a switch an intelligent Hub. Give reason if yes. 2. **Switching Mechanism** (30 minutes) a. Switch Hardware device b. Usage c. Advantage & disadvantages Types Circuit Message Packet 3. Exercise (5 minutes) – Compare the three types
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading https://www.youtube.com/watch?v=f4rsJ0e72NY&list=PLUtfVcb-iqn8dG1-Cn7NTEdILR3hRVgcN&index=19 https://www.youtube.com/watch?v=K8IsEbgoPTA&list=PLUtfVcb-iqn8dG1-Cn7NTEdILR3hRVgcN&index=20 Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 18	**Course Name: C**omputer network **Topic**: Switching Mechanism	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. understand various types of switching tehniques.
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) What are the basics steps involved in circuit switching? Which switching technique is known as Store & Forward switching and Why? 2. **Switching Mechanism** (30 minutes) Circuit Message Packet Comparison 3. Exercise (5 minutes) – List drawback of each type.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading https://www.youtube.com/watch?v=f4rsJ0e72NY&list=PLUtfVcb-iqn8dG1-Cn7NTEdILR3hRVgcN&index=19 https://www.youtube.com/watch?v=K8IsEbgoPTA&list=PLUtfVcb-iqn8dG1-Cn7NTEdILR3hRVgcN&index=20 Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 19	**Course Name: C**omputer network **Topic**: Modem	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. understand
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) Is it possible for computer system to communicate directly with Internet Service Provider? 2. **Modem** (30 minutes) Features Types Working 3. Exercise (5 minutes) – List types of Modem
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading https://www.geeksforgeeks.org/what-is-modem/ Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 20	**Course Name: C**omputer network **Topic**: RS cable	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. Understand the basis of RS 232 cable
Teaching Aids (if any)	a. ICT

1. **Introduction** (5 minutes)

   Have you seen cables used in the set top box or in computers, weight machines and in expensive machines ?

   Do you know any cable used as USB cable to communicate with other peripheral devices.

   RS Interface (30 minutes)

a. Interface
b. Rs 232 & Rs 232C

c. Electrical specifications
d. Pins & working
e. Applications

2. Exercise (5 minutes) –
   Reall Pin configurations and abbreviations

1. Summarize the Lesson Learning Outcomes and get affirmation from students on these.
2. Suggested Reading
   https://www.technologyuk.net/telecommunications/communication-technologies/rs-232-interface.shtml
   https://www.geeksforgeeks.org/rs232c-for-data-transfer/

Spend 5 minutes to wrap up and consolidate the learnings

1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss.

Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 21	**Course Name: C**omputer network Topi :Line Encoding	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. Understand the concept of encoding. b. able to learn different types of Encoding
Teaching Aids (if any)	a. Chalk & Talk b. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - Why encoding is required in data communications? 2. **Encoding techniques** (30 minutes) a. Types of Encoding (NRZ, RZ, Manchester etc) b. What is encoding and its types? c. What are the various encoding schemes? d. What are the basic signal encoding techniques for digital transmission? 3. Exercise (5 minutes) – Practice of Encoding of a given bit pattern.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading 3. https://youtu.be/ifgs0uypC78 Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 22	**Course Name: C**omputer network Topic: Line encoding	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. Understand the concept of encoding. b. able to learn different types of Encoding
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - Why encoding is required in data communications? 2. **Encoding techniques** (30 minutes) a. Types of Encoding (NRZ, RZ, Manchester etc) b. What is encoding and its types? c. What are the various encoding schemes? d. What are the basic signal encoding techniques for digital transmission? 3. Exercise (5 minutes) – Practice of Encoding of a given bit pattern.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading 3. https://youtu.be/ifgs0uypC78 Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 23	Course Name: Computer network Topic: Sliding Window protocol	Course No.: ECE-603

Objectives	At the end of the lesson the student shall be able to: a. Understand siding window protocol.
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - Is it possible to send multiple frames at once ? 2. Sliding window protocol (30 minutes) What Is a Protocol? What Is Sliding Window Protocol? Working of the Sliding Window Protocol Advantages and Disadvantages of Sliding Window Protocol Go back N ARQ Selective Repeat ARQ 3. Exercise (5 minutes) –One minute Paper Activity Question give on sliding window
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading Link:https://www.simplilearn.com/tutorials/cyber-security-tutorial/working-effects-sliding-window-protocol https://www.scaler.com/topics/computer-network/sliding-window-protocol/ Video Link: https://www.youtube.com/watch?v=VUdfS70puWI 3. Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 24	**Course Name: C**omputer network **Topic: Hldc**	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. Able to understand reliable delivery of data frames over a network or communication link.
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - What is difference between bit oriented protocol and Byte oriented protocol ? 2. High-Level Data Link Control (HDLC) (30 minutes) a. HDLC b. HDLC Frame c. What Is HDLC and Its Stations? 3. Exercise (5 minutes) –One minute Paper Activity What is the frame format of HDLC
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading https://www.simplilearn.com/tutorials/cyber-security-tutorial/what-is-hdlc Link: 3. https://www.youtube.com/watch?v=yOc8zh0Hlls&pp=ygUkIGxlY3R1cmUgb24gaGxkYyBpbiBjb21wdXRlciBuZXR3b3JrSpend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 25	Course Name: Computer network Topic: Multiple Access Protocols	Course No.: ECE-603

Objectives	At the end of the lesson the student shall be able to: a. Able to understand different multiple access techniques & protocols.
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - What is main functionality of the transmission media ? 2. Multiple access techniques (30 minutes) a. Media access protocols b. Types of MAC techniques c. Aloha and types d. Disadvantage & advantages 3. Exercise (5 minutes) –One minute Paper Activity What is the purpose of a multiple access protocol? Differentiate between Random access and channelised Protocols
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading https://youtu.be/fTcF4ZcvDts?list=PLUtfVcb-iqn8dG1-Cn7NTEdILR3hRVgcN Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 26	**Course Name: C**omputer network Topic: CSMA & types	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. Able to understand Random access techniques & protocols.
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - Give the difference between logical link control & media access control ? 2. Random access techniques (30 minutes) CSMA CSMA/CD CSMA/CA Methods used in the CSMA/ CA to avoid the collision 3. Exercise (5 minutes) – Brief any one method used in the CSMA/ CA to avoid the collision
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading https://youtu.be/fTcF4ZcvDts?list=PLUtfVcb-iqn8dG1-Cn7NTEdILR3hRVgcN Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 27	**Course Name: C**omputer network Topic: Channelized Protocols	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. Able to understand various channelised protocols of Medium access techiques.
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) - What do mean by vulnerable time? - What do you all the time when station waits for a random amount of time and retransmit the frame again ? - 2. Channelized access techniques (30 minutes) TSMA FDMA CDMA a. Disadvantage & advantages 3. Exercise (5 minutes) – List the features of three types covered in session today
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading https://youtu.be/fTcF4ZcvDts?list=PLUtfVcb-iqn8dG1-Cn7NTEdILR3hRVgcN Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 28	**Course Name: C**omputer network Topi :IEEE Standards	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. Able to understand LAN IEEE standards
Teaching Aids (if any)	a. Chalk & Talk b. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - What is IEEE standards used for ? 2. LAN protocol IEEE 802 (30 minutes) a. IEEE Protocol standards b. List of IEEE Standards in Computer Networks IEEE 802 IEEE 802.1 IEEE 802. 1s IEEE 802.2 c. Why IEEE 802 Standards are Important? 3. Exercise (5 minutes) –
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading https://youtu.be/aV-J8vZ2n2E?list=PLUtfVcb-iqn8dG1-Cn7NTEdILR3hRVgcN Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 29	Course Name: Computer network	Course No.: ECE-604

Objectives	At the end of the lesson the student shall be able to: a. Able to understand Routing and its types.
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - What is a router ? - Name any component of router. 2. **Routing** (30 minutes) a. Types of Routing - Static - Default - Dynamic - Advantages & disadvantages b. Distance vector Routing c. Link State Routing d. Routing v/s Routed Protocols in Computer Network 3. Exercise (5 minutes) – Question on DVR
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading/link 3. https://youtu.be/AmlOSGYkKXc?list=PL32DBC269EF768F74 Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 30	**Course Name: C**omputer network Topi:Routing	**Course No.: ECE-604**

Objectives	At the end of the lesson the student shall be able to: a. Able to understand Routing and its types.
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - What is a router ? - Name any component of router. 2. **Routing** (30 minutes) a. Types of Routing - Static - Default - Dynamic - Advantages & disadvantages b. Distance vector Routing c. Link State Routing d. Routing v/s Routed Protocols in Computer Network 3. Exercise (5 minutes) – Ques on LinK state routing
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading/link 3. https://youtu.be/AmlOSGYkKXc?list=PL32DBC269EF768F74 Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 33	**Course Name: C**omputer network Topic : IP Adress	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. Understand the concept IP addressing b. able to learn different types of IP addresses in network.
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - What is a network address ? - What is full form of IP address and why do we use it for ? 2. **IP address** (30 minutes) a. Basic b. How do IP address works c. Structure & types of IP addresses d. Types of website IP addresses 3. IPV4 & IPV6 IPv6 representation, we have three addressing methods : ● Unicast ● Multicast ● Anycast 3. Exercise (5 minutes) – Explain format of IPv4
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading 3. https://youtu.be/wbp5DDSCrUw?list=PL32DBC269EF768F74 4. https://youtu.be/FkaFr3cpg6U?list=PLbRMhDVUMngf-peFloB7kyiA40EptH1up Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss.

	Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 31	Course Name: Computer network Topi: Congestion	Course No.: ECE-603

Objectives	At the end of the lesson the student shall be able to: a. Able to understand congestion in network b. able to know affect of congestion
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - What is congestion in general ? - What is data flow ? - 2. **Congestion** (30 minutes) a. Affect of congestion b. Congestion control technique in network c. Difference between congestion control and flow control d. Congestion control in data gram subnet e. TCP congestion control 3. Exercise (5 minutes) – Define Types of Congestion
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading 3. https://youtu.be/hKq1tYlVxdQ?list=PLUtfVcb-iqn8dG1-Cn7NTEdILR3hRVgcN Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 32	**Course Name: C**omputer network Topic: Congestion control	**Course No.: ECE-604**

Objectives	At the end of the lesson the student shall be able to: a. Able to understand congestion in network b. able to know a of congestion control techniques.
Teaching Aids (if any)	a. Chalk & Talk b. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - What is various issue in congestion control 2. **Congestion Control** (30 minutes) a. Congestion control technique in network b. Difference between congestion control and flow control c. Congestion control in datagram subnet d. TCP congestion control 3. Exercise (5 minutes) –
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading/link https://youtu.be/V4QYffX9v60?list=PL32DBC269EF768F74 Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 33	**Course Name: C**omputer network Topic : IP Adress	**Course No.: ECE-603**

Objectives	At the end of the lesson the student shall be able to: a. Understand the concept IP addressing b. able to learn different types of IP addresses in network.
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - What is a network address ? - What is full form of IP address and why do we use it for ? 2. **IP address** (30 minutes) a. Basic b. How do IP address works c. Structure & types of IP addresses d. Types of website IP addresses 3. IPV4 & IPV6 IPv6 representation, we have three addressing methods : ● Unicast ● Multicast ● Anycast 3. Exercise (5 minutes) – Explain format of IPv4
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading 3. https://youtu.be/wbp5DDSCrUw?list=PL32DBC269EF768F74 4. https://youtu.be/FkaFr3cpg6U?list=PLbRMhDVUMngf-peFloB7kyiA40EptH1up Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss.

	Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No.34	Course Name: Computer network Topic Traffic shaping algm	Course No.: ECE-603

Objectives	At the end of the lesson the student shall be able to: a. Able to understand the leaky bucket algorithm of congestion.
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - Discuss various techniques of congestion control. 2. **Leaky bucket algorithm**(30 minutes) a. Types b. Leaky Bucket c. Token Bucket d. Difference e. Advantages f. Some factors need to be considered for designing the transmission media: Bandwidth Interference Advantages & disadvantages 3. Exercise (5 minutes) –
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading https://www.youtube.com/watch?v=j5ryzIDt5Ks Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No.35	Course Name: Computer network Topic:Subnet	Course No.: ECE-603

Objectives	At the end of the lesson the student shall be able to: a. Understand the concept of supernetting in network layer.
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** What is a subnet ? Does supernet reduce the size of routing table ? 2. **Supernetting** (30 minutes) a. Subnet b. How does supernet works c. supernet mask d. Example 3. Exercise (5 minutes) – Practice of Encoding of a given bit pattern.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading/links 3. https://youtu.be/nhGRUmtnGB4 4. 5. Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 36	Course Name: Computer network Topic: QoS	Course No.: ECE-603

Objectives	At the end of the lesson the student shall be able to: a. Able to learn about quality of service network layer.
Teaching Aids (if any)	a. Chalk & Talk b. ICT
Teaching Development	1. **Introduction** What ? 2. **QoS** (30 minutes) a. Need of QoS b. Techniques involved in QoS c. Scheduling d. Traffic Shaping e. Mechanism of QoS f. Types g. Advantages & Disadvantages 3. Exercise (5 minutes) – State one adv & disadv
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading/links https://www.scaler.com/topics/computer-network/qos/ Link : https://youtu.be/WM1OXVMetkE?list=PLEAYkSg4uSQ2NMmzNNsEK5RVbhxqx0BZF 3. Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 37	Course Name: Computer network Topic : Elements of transport layer	Course No.: ECE-603

Objectives	At the end of the lesson the student shall be able to: a. able to understand about elements of transport layer
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - Wha is the function of transport layer? 2. **Transport layer Elements** (30 minutes) a. Addressing b. Connection establishment c. Connection release d. Flow control e. Multiplexing & demultiplexing Transport Layer Protocol How protocols work 3. Exercise (5 minutes) – Question related to topic covered
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading https://www.geeksforgeeks.org/transport-layer-protocol Link: https://www.youtube.com/watch?v=EqzDTO9tdqs&pp=ygUqbnB0ZWwgbGV0dXJlIG9uIGVsZW1lbnQgb2YgdHJhbnNwb3J0IGxheWVy Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 38	Course Name: Computer network Topic: DNS	Course No.: ECE-603

Objectives	At the end of the lesson the student shall be able to: a. able to understand about DNS network system protocol.
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) - How does web browse interact ? - What is the pgone book of internet? 2. **DNS** (30 minutes) a. Basics of DNS Generic Domain country domain Inverse domain How domain works 3. Exercise (5 minutes) – Give example base on dns
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading https://youtu.be/ziaW3KdSOkI https://youtu.be/ziaW3KdSOkI Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 39	Course Name: Computer network Topic : FTP and email	Course No.: ECE-603

Objectives	At the end of the lesson the student shall be able to: a. able to understand about the email and FTP.
Teaching Aids (if any)	a. Chalk & Talk b. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - What is an email? - what is the name of file transfer protocol ? 2. **Email and FTP** (30 minutes) a. Basics b. How mail operations works c. FTP d. Types of FTP e. Types of connetion of FTP 3. Exercise (5 minutes) – c
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading 3. https://www.youtube.com/watch?v=qyGX1XMfIMk 4. https://www.youtube.com/watch?v=tOj8MSEIbfA https://youtu.be/TexSAR5ClcU Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents

Lesson Plan No. 40	Course Name: Computer network Topic :Email	Course No.: ECE-603

Objectives	At the end of the lesson the student shall be able to: a. able to understand about the email.
Teaching Aids (if any)	a. ICT
Teaching Development	1. **Introduction** (5 minutes) - Ask questions - What is an email? - what is the name of file transfer protocol ? 2. **Email** (30 minutes) a. Basics b. How mail operations works c. Components of Email d. Protocols of Email e. Pop and IMAP f. SMTP 3. Exercise (5 minutes) – Questions related to topic covered
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading 3. https://www.youtube.com/watch?v=qyGX1XMfIMk https://youtu.be/TexSAR5ClcU Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents