Lesson Plan No. 1	Course Name: Wireless and Mobile Communication Topic: Introduction to Wireless Communication System	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. understand with fundamentals of Cellular Telephone system b. familiarize with the Evolution of wireless communication
Teaching Aids (if any)	a. Video on evolution of mobile communication b. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. - What do you mean by communication? - What is the difference between wired and wireless? - What challenges are associated with wired communication? - Highlight the importance of wireless communication. - Introduce the formal definition wireless communication. - Highlight the important characteristics of wireless communication. - Emphasize on the applications of wireless communication 2. **Development** (30 minutes) - Introduction to wireless communication - How wireless came into existence - Evolution of wireless communication - 3. Exercise (5 minutes) – Ask students to give some examples of wireless systems used in day to day life.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading https://youtu.be/X5jPoQzEh-M https://nptel.ac.in/content/storage2/courses/106105080/pdf/M5L9.pdf 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. 2	Course Name: Wireless and Mobile Communication Topic: Introduction to Wireless Communication System	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. understand with fundamentals of Cellular Telephone system b. familiarize with the Evolution of wireless communication
Teaching Aids (if any)	a. Video on evolution of mobile communication b. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. - What do you mean by communication? - What is the difference between wired and wireless? - What challenges are associated with wired communication? - Highlight the importance of wireless communication. - Introduce the formal definition wireless communication. - Highlight the important characteristics of wireless communication. - Emphasize on the applications of wireless communication - Evolution of wireless communication 2. **Development** (30 minutes) - Introduction to wireless communication - Types of wireless communication - Advantages and disadvantages - Important terms related to wireless communication system - Transmission Modes in wireless communication - FDD and TDD - 3. Exercise (5 minutes) – Ask students to give some examples of wireless systems used in day to day life.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading https://youtu.be/HcphXq4TMxk https://nptel.ac.in/content/storage2/courses/106105080/pdf/M5L9.pdf Spend 5 minutes to wrap up and consolidate the learnings

Lesson Plan No. 3	Course Name: Wireless and Mobile Communication Topic: Introduction to Types of Wireless Communication System	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. understand with fundamentals of mobile system around the world b. demonstrate various types of wireless communication system c. familiarize with the trends in cellular radio communication
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. - Highlight the importance of mobile radio system - Discuss the difference between mobile and wireless - Discuss the difference between portable and mobile - Emphasize on the applications of wireless communication around the globe. 2. **Development** (30 minutes) - Mobile Radio System around the world, - Types of Wireless communication System - Comparison of Common wireless system - Trends in Cellular radio and personal communication 3. Exercise (5 minutes) – Ask students to summarize the difference between various types of wireless communication
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video https://youtu.be/QHDxbbc1GWs https://nptel.ac.in/content/storage2/courses/106105080/pdf/M5L9.pdf 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. 4	Course Name: Wireless and Mobile Communication Topic: Introduction to Generations of cellular system	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. understand the fundamentals of 2G and 3G wireless Network b. familiarize with the Evolution of wireless communication networks
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. - What do you mean by 2G communication? - Name the various generations of mobile network - Which generation are we actively using? 2. **Development** (30 minutes) - Introduction to 1G Cellular system - Issues with 1G system - 2G (Second Generation) Digital Cellular System - Study of various 2G (Cellular System Standards - Drawbacks of 2G Cellular System 3. Exercise (5 minutes) – Ask students to give some examples of various applications in which 2G is deployed.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading 3. https://nptel.ac.in/content/storage2/courses/106105080/pdf/M5L9.pdf 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. 5	Course Name: Wireless and Mobile Communication Topic: Evolution from 2G to 3G	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. understand the fundamentals of 2G wireless Network b. familiarize with the Evolution of wireless communication networks
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. - Mention the drawbacks of 2G System - Name the various generations of mobile network - Which generation are we actively using? 2. **Development** (30 minutes) - Introduction of evolution from 2G to 3G Cellular Network - Evolution from 2G to 3G Cellular Network using GSM - Evolution from 2G to 3G Cellular Network using CDMA 3. Exercise (5 minutes) – Ask students to give some examples of various applications in which 2.5G was used.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading https://youtu.be/ZfuJq7yPLk8 https://nptel.ac.in/content/storage2/courses/106105080/pdf/M5L9.pdf 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: Wireless and Mobile Communication Topic: Introduction to 3G Cellular Network	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. understand the fundamentals of 3G wireless Network b. demonstrate the network capabilities of IMT-2000
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. - Mention the drawbacks of 2G System - What do you mean by 2.5 G communication? - List the footprints for evolution of 3G from 2G using GSM 2. **Development** (30 minutes) - Introduction of 3G Wireless Network - Evolution of IMT-2000 Standard 3G Network Capabilities 3G Network Standard 3G Wireless Network Applications 3. Exercise (5 minutes) – Ask students TO give some examples of various applications of 3G network.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading https://youtu.be/-ymnQ5rpcYA https://nptel.ac.in/content/storage2/courses/106105080/pdf/M5L9.pdf 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. 7	Course Name: Wireless and Mobile Communication Topic: Introduction to 4G Cellular Network	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. understand the fundamentals of 4G wireless Network b. demonstrate the network capabilities of 4G Network
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. - Mention the issues encountered by 3G - What is the difference between 2G & 3G - What are the data rates offered by 3G Network. - In what area of 3G Network is there a room for improvement? 2. **Development** (30 minutes) - Introduction of 4G Wireless Network - 4G Network Capabilities - 4G Network Standard - 4G Wireless Network Applications - Advantages - 3. Exercise (5 minutes) – Ask students to give some examples of various applications of 4G network.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested video https://youtu.be/MONjGfn0Sjk 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. 8	Course Name: Wireless and Mobile Communication Topic: Introduction to 5G Cellular Network	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. understand the fundamentals of 5G wireless Network b. demonstrate the network capabilities of 5G Network
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. - Mention the issues encountered by 4G - What is the difference between 2G, 3G & 4G - What are the data rates offered by 4G Network. - In what area of 4G Network is there a room for improvement? 2. **Development** (30 minutes) - Introduction of 5G Wireless Network - 5G Network Capabilities - 5G Network Standard - 5G Wireless Network Applications - Advantages of 5G - 3. Exercise (5 minutes) – Ask students to give some examples of various applications of 5G network.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video https://youtu.be/MONjGfn0Sjk 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. 9	Course Name: Wireless and Mobile Communication Topic: Introduction to 5G Cellular Network	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. understand the fundamentals of 6G wireless Network b. demonstrate the network capabilities of 6G Network
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. - Mention the issues encountered by 5G - What is the difference between 2G, 3G, 4G & 5G - What are the data rates offered by 5G Network. - In what area of 5G Network is there a room for improvement? 2. **Development** (30 minutes) - Introduction of 6G Wireless Network - 6G Network Capabilities - 6G Network Standard - 6G Wireless Network Applications - Advantages of 6G - 3. Exercise (5 minutes) – Ask students to give some examples of various applications of 6SG network.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video https://youtu.be/JFCHXn6yvJU 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. 10	Course Name: Wireless and Mobile Communication Topic: Introduction to Cellular Concept	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. familiarize with the fundamentals of Cellular Concept b. understand the significance of frequency reuse in cellular concept
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. - What do you mean by a cell? - What is a cellular system? - What is a B.S? - What were the drawbacks in the traditional communication system - 2. **Development** (30 minutes) - Introduction to Cellular Concept - What is the need of cellular system? - What are the advantages of adopting cellular system? - Size & Shape of Cell 3. Exercise (5 minutes) – Ask students to give some advantages of cellular concept Solve numerical problems based on cellular concept.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/28M558JVTd0 https://youtu.be/tt1-Ohe9QQU 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. 11	Course Name: Wireless and Mobile Communication Topic: Introduction to Cellular Concept	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. familiarize with the fundamentals of Cellular Concept b. understand the significance of frequency reuse in cellular concept
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. - What do you mean by a cell? - What is a cellular system? - What is a B.S? - What were the drawbacks in the traditional communication system - 2. **Development** (30 minutes) - Topology of cellular network - Cluster and system capacity - Solve problems based on system capacity 3. Exercise (5 minutes) – Solve numerical problems based on system capacity and cellular structure
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/28M558JVTd0 https://youtu.be/tt1-Ohe9QQU 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. 12	Course Name: Wireless and Mobile Communication Topic: Introduction to Frequency reuse	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. familiarize with the fundamentals of Frequency reuse b. articulate the significance of frequency reuse in cellular concept
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. - What do you mean by a cell? - What is a cluster? - How many cells can be accommodated in a cluster? - Which cell shape is best suited for cellular system and why? - In a cluster how many cells can be accommodated? - 2. **Development** (30 minutes) - Hexagonal geometry - Introduction of Frequency reuse - Frequency reuse pattern - 3. Exercise (5 minutes) – Ask students to give some advantages of frequency reuse concept Solve numerical problems based on frequency reuse.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/whYljse4Abc 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. 13	Course Name: Wireless and Mobile Communication Topic: Introduction to Handoff Strategies	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. familiarize with the fundamentals of Handoff Strategies b. articulate the need and significance of handoff in cellular system c. understand the types of handoff in cellular system
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. - What is frequency reuse? - What is the significance of using it? - Why is hexagonal structure preferred over other shapes? - How a call remains connected even when you are moving? - 2. **Development** (30 minutes) - Introduction to the concept of Hand-off - Need of Hand-off - Types of Hand-off 3. Exercise (5 minutes) – Ask students to give some advantages of handoff Solve numerical problems based on frequency reuse.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/Epy8tRSo5DY https://youtu.be/Ue66ryVwfGA 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: Wireless and Mobile Communication Topic: Introduction to Handoff Strategies	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. articulate the need and significance of handoff in cellular system b. understand the types of handoff in cellular system c. familiarizes with the associated problems of handoff
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. - What is handoff? - What is the significance of using it? - Why there is a need for handoff? - Highlight the types of Handoff - 2. **Development** (30 minutes) - Types of Hand-off - Initiation of hand-off - Problems with hand-off - Prioritizing hand-off - 3. Exercise (5 minutes) – Ask students to give some advantages of handoff
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/Ue66ryVwfGA 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: Wireless and Mobile Communication Topic: Introduction to Co-Channel Interference	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. articulate the fundamentals of co-channel interference b. familiarizes with the methods of reducing co-channel interference
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. - What is handoff? - What is the significance of using it? - Why there is a need for handoff? - Highlight the types of Handoff - What is interference? - What kind of interferences have you encountered during your calls? - 2. **Development** (30 minutes) - Introduction to the concept of Co-channel - Co-channel Interference - Methods to reduce Co-channel Interference - 3. Exercise (5 minutes) – Ask students to give a short summary of the lecture
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/BZyG01rrwgA 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: Wireless and Mobile Communication Topic: Introduction to Adjacent Channel Interference	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. articulate the fundamentals of adjacent channel interference b. familiarizes with the methods of reducing adjacent channel interference
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	- **Introduction** (5 minutes) - Ask questions. - What do you mean Co-channel? - What is Co-channel Interference? - **Development** (30 minutes) - Introduction to the concept of Adjacent channel - Adjacent Interference - Methods to reduce Adjacent channel Interference - - Exercise (5 minutes) – Ask students to solve numerical problems
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/BZyG01rrwgA 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: Wireless and Mobile Communication Topic: Introduction to Cell Splitting	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. understand the fundamentals of improving cell capacity. b. familiarize with the methods of cell splitting.
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	- **Introduction** (5 minutes) - Ask questions. - What do you mean Cell Capacity? What is the significance of having increased cell capacity? What is the effect of cell capacity on system capacity? - **Development** (30 minutes) - Introduction to cell capacity - Methods of improving cell capacity - Cell Splitting - Method of how cell splitting is done. - What is the effect on cell splitting on system capacity - Numerical problems - - Exercise (5 minutes) – Ask students to solve numerical problems on system capacity
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/oiuPU29SktQ 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: Wireless and Mobile Communication Topic: Introduction to Cell Sectoring	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. To articulate the concept of cell sectoring b. familiarize with various parameters of cell sectoring
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	- **Introduction** (5 minutes) - Ask questions. - What do you mean Cell Capacity? What is the significance of having increased cell capacity? What is the effect of cell capacity on system capacity? - **Development** (30 minutes) - Introduction to cell capacity - Methods of improving cell capacity - Cell Sectoring - Method of how cell sectoring is done. - What is the effect on cell sectoring on system capacity - How does cell sectoring enhance system capacity - - Exercise (5 minutes) – Ask students to solve numerical problems on system capacity
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/oiuPU29SktQ 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: Wireless and Mobile Communication Topic: Introduction to Advanced Mobile Communication Standards	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Familiarization with the Advanced Mobile Communication Standards Understand the architecture and working principle of Wi-Fi standard.
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	- **Introduction** (5 minutes) - Ask questions. What is Wi-Fi? What are the advantages of using Wi-Fi over others? What are the application areas where it is used? - **Development** (30 minutes) - Introduction to Wi-Fi standard - Features of standard - Architecture - Infrastructure based - Infrastructure less - Applications and advantages of Wi-Fi standard - - Exercise (5 minutes) – Ask students to explain the advantages and applications of various wireless standards. Ask students to discuss the applications of Wi-Fi
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/vjhp0zTXEsc https://youtu.be/QhKIaK4ReUA 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: Wireless and Mobile Communication Topic: Introduction to IEEE 802.11 and its variants	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Understand the fundamentals of IEEE 802.11 WLAN standard and its variants. b. Discuss the difference between various WLAN Variants and its data rates.
Teaching Aids (if any)	a. PowerPoint Presentation

Teaching Development	- **Introduction** (5 minutes)
	- Ask questions.
	What do you mean by IEEE standard?
	What is the difference between LAN, PAN, & WAN?
	What are the application areas where it is used?
	
	- **Development** (30 minutes)
	- Introduction to IEEE 802.11 WLAN standard
	- Classification of Variants of IEEE 802.11
	  - IEEE 802.11
	  - IEEE 802.11a
	  - IEEE 802.11b
	  - IEEE 802.11g
	  - IEEE 802.11n
	  - IEEE 802.11p
	- Applications and advantages of Wi-Fi standard
	-
	- Exercise (5 minutes) –
	- Ask students to prepare a comparison of all the variants of WLAN based on data rate, frequency used and the year of adoption.

Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 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. 21	Course Name: Wireless and Mobile Communication Topic: Introduction to IEEE 802.11 PHY layer technologies	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Familiarize with the physical layer technologies of WLAN b. Describe the importance of physical layer technology .
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	- **Introduction** (5 minutes) - Ask questions. What do you mean by OSI Model? How many Layers are their in an OSI Model? What are the main functions of physical layer and data link layer? - **Development** (30 minutes) - Introduction to Physical Layer in IEEE 802.11 - Functions of PHY layer - Services provided - Types of sub-layer and their functions - PHY frame structure - Exercise (5 minutes) – - Ask students to summarize the lecture in detail and discuss the importance of PHY layer in WLAN
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture 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: Wireless and Mobile Communication Topic: Introduction to IEEE 802.11 MAC mechanism	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Familiarize with the concept of IEEE 802.11 MAC mechanism b. Describe the importance of MAC layer.
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	- **Introduction** (5 minutes) - Ask questions. - Functions of PHY layer - Services provided - Types of sub-layer and their functions - How many parts are there in the PHY frame structure - **Development** (30 minutes) - Introduction to MAC Layer in IEEE 802.11 - Block diagram of MAC Mechanism - Functions of MAC sub layers - Frame structure of MAC Layer - Explanation of Each block of frame structure - Exercise (5 minutes) – - Ask students to summarize the lecture in detail and discuss the importance of MAC Mechanism in WLAN
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture 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: Wireless and Mobile Communication Topic: Introduction to IEEE 802.11 Security, Qos and handover Issues	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Articulate the importance of Security in IEEE 802.11 WLAN Standard b. Understand the fundamentals of Quality of service in various wireless standards. c. Familiarize with the handover Issues in wireless communication.
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	- **Introduction** (5 minutes) - Ask questions. - Functions of PHY layer - Services provided - Types of sub-layer and their functions - How many parts are there in the PHY frame structure - **Development** (30 minutes) - Introduction to the importance of security in IEEE 802.11 - Wired Equivalent Privacy (WEP) - Wi-Fi Protected Access (WPA) - Wi-Fi Protected Access 2 (WPA 2) - Wi-Fi Protected Access 3 (WPA 3). - Introduction to QoS in 802.11 - Handover Issue in IEEE 802.11 - Exercise (5 minutes) – - Ask students to summarize the lecture in detail.
	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/WM1OXVMetkE 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: Wireless and Mobile Communication Topic: Introduction to IEEE 802.15 WPAN standard	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: **a.** Articulate the concept of IEEE 802.15 WPAN standard. b. Understand the architecture of IEEE 802.15.
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	- **Introduction** (5 minutes) - Ask questions. - What do you mean by IEEE 802.15 standard? - What are its uses? - **Development** (30 minutes) - Introduction to IEEE 802.15 WPAN standard - Architecture of Bluetooth Exercise (5 minutes) – - Ask students to illustrate an example of IEEE 802.15 standard
	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/vjhp0zTXEsc 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. 25	Course Name: Wireless and Mobile Communication Topic: Introduction to IEEE 802.15 WPAN standard	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Understand the architecture of IEEE 802.15. b. Familiarise with the Bluetooth protocol stack.
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	- **Introduction** (5 minutes) - Ask questions. - What do you mean by IEEE 802.15 standard? - What are its uses? - **Development** (30 minutes) - Bluetooth stack protocol - RF Layer - Baseband Link Layer - Link Manager protocol layer - L2CAP - SDP Layer - RF comm layer - OBEX - WAP - TCS - Application Layer - Types of Bluetooth - Advantages - Disadvantages - Applications Exercise (5 minutes) – - Ask students to illustrate a comparison on the versions of Bluetooth.
	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/vjhp0zTXEsc 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: Wireless and Mobile Communication Topic: Introduction to IEEE 802.16 Wireless broadband access standards	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Familiarise with the IEEE 802.16 Wireless broadband access standards. b. Understand the architecture of IEEE 802.16.
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	- **Introduction** (5 minutes) - Ask questions. - What do mean by IEEE 802.16? - What is Wi-Max? - What are its uses? - **Development** (30 minutes) - Introduction to IEEE 802.16 - Architecture IEEE 802.16 Exercise (5 minutes) – - Ask students to illustrate an example of IEEE 802.16 standard
	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/5j7jc3blPNw 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: Wireless and Mobile Communication Topic: Introduction to IEEE 802.16 Wireless broadband access standards	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Familiarise with the IEEE 802.16 Wireless broadband access standards. b. Understand the PHY layer overviews of WiMAX.
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	- **Introduction** (5 minutes) - Ask questions. - What do mean by IEEE 802.16? - What is WIMAX? - What are its uses? - What is the need of WIMAX? - **Development** (30 minutes) - Introduction to IEEE 802.16 - Architecture IEEE 802.16 - Types of user station - Layer Configuration of IEEE 802.16 - Physical layer - Features of PHY - Fixed WIMAX - Variable WIMAX Exercise (5 minutes) – - Ask students to discuss the need of IEEE 802.16 and also mention its various application areas.
	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/5j7jc3blPNw 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: Wireless and Mobile Communication Topic: Introduction to IEEE 802.16 Wireless broadband access standards	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Familiarise with the IEEE 802.16 Wireless broadband access standards. b. Understand the MAC layer overviews of WiMAX.
Teaching Aids (if any)	a. PowerPoint Presentation

Teaching Development	- **Introduction** (5 minutes)
	- Ask questions.
	- What do mean by IEEE 802.16?
	- What is WIMAX?
	- What are its uses?
	- What is the need of WIMAX?
	
	- **Development** (30 minutes)
	- Introduction to MAC Layer
	- Features of MAC
	- Types of MAC sub-layer
	  - Security sub-layer
	  - Mac Common sub-layer
	  - Service Specific Convergence sub-layer
	- MAC sub-layer Features
	- MAC syb-layer Services
	-
	Exercise (5 minutes) –
	- Ask students to discuss the need of IEEE 802.16 and also mention its various application areas.

	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/5j7jc3blPNw 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: Wireless and Mobile Communication Topic: Introduction to IEEE 802.16 Wireless broadband access standards	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Understand the MAC layer overviews of WiMAX. b. Familiarize with the architecture of WiMAX network. c. Analyse the Initialization and handover procedures in WIMAX.
Teaching Aids (if any)	a. PowerPoint Presentation

Teaching Development	- **Introduction** (5 minutes)
	- Ask questions.
	- Features of MAC
	- Types of MAC sub-layer
	  - Security sub-layer
	  - Mac Common sub-layer
	  - Service Specific Convergence sub-layer
	- MAC sub-layer Features
	- MAC syb-layer Services
	
	- **Development** (30 minutes)
	- MAC sub-layer Frame structure
	- Function of each block of frame
	- Advantages
	- disadvantages
	- Applications of WIMAX
	- WIFI Vs WIMAX
	- Architecture of WIMAX
	- Initialization and handover procedures in WIMAX
	-
	Exercise (5 minutes) –
	- Ask students to discuss the Difference between Wi-Fi and WIMAX.

	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/5j7jc3blPNw 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: Wireless and Mobile Communication Topic: Introduction to Mobile Network, Transport and Application Layers, & Mobile IP	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Understand the functionalities of the mobile network, transport, and application layers. b. Familiarize with Mobile IP and its importance in mobile communication. c. Analyse the challenges and solutions in mobile communication regarding network, transport, and application layers.
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	- **Introduction** (5 minutes) - Ask questions. - Brief overview of mobile network layers and their importance. - Introduce the concept of Mobile IP. - **Development** (30 minutes) - Mobile Network Layer: - Handover procedures and challenges. - Transport Layer: - Challenges in mobile transport layer (e.g., packet loss, latency). - Application Layer: - Challenges in mobile application layer (e.g., QoS, compatibility). - Mobile IP: - Introduction to Mobile IP and its significance. - Components and operation. - Handover management and optimization. - Exercise (5 minutes) – - Ask students to discuss the challenges and solutions in mobile communication at each layer.
	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/5yp3Ti47ZZc 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: Wireless and Mobile Communication Topic: Introduction to Mobile IP	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Define Mobile IP and its importance in mobile communication. b. Explain the components and operation of Mobile IP. c. Analyse the challenges and optimizations in Mobile IP-based networks.
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	- **Introduction** (5 minutes) - Ask questions. - Define Mobile IP and its significance in mobile communication. - Explain the need for seamless mobility in modern networks. - **Development** (30 minutes) - Mobile IP Overview: - Definition and purpose. - Historical background and evolution. - Components of Mobile IP: - Mobile Node (MN), Home Agent (HA), Foreign Agent (FA), and Correspondent Node (CN). - Roles and responsibilities of each component. - Operation of Mobile IP: - Registration process. - Tunneling and encapsulation. - Data packet delivery. - Challenges and optimizations: - Handover latency. - Routing optimization. - Security considerations. - Exercise (5 minutes) – - Ask students to discuss the benefits and challenges of Mobile IP in modern mobile networks.
	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/5yp3Ti47ZZc 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: Wireless and Mobile Communication Topic: Introduction to Packet Delivery Process in Mobile Networks	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Describe the packet delivery process in mobile networks. b. Explain the role of various entities in packet delivery, including Mobile Nodes (MNs), Home Agents (HAs), Foreign Agents (FAs), and Correspondent Nodes (CNs). c. Analyse the challenges and optimizations in packet delivery in mobile networks.
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	- **Introduction** (5 minutes) - Ask questions. - Introduce the packet delivery process in mobile networks. - Highlight the importance of efficient packet delivery for mobile communication. - **Development** (30 minutes) - Overview of Packet Delivery: - Explanation of packet routing in mobile networks. - Differentiate between routing in wired and mobile networks. - Entities Involved: - Mobile Nodes (MNs), Home Agents (HAs), Foreign Agents (FAs), and Correspondent Nodes (CNs). - Roles and responsibilities of each entity in packet delivery. - Packet Delivery Process: - Registration process of Mobile Nodes. - Tunneling and encapsulation of data packets. - Routing and forwarding mechanisms. - Challenges and optimizations: - Handover latency. - Packet loss and retransmission. - Quality of Service (QoS) considerations. - Exercise (5 minutes) – - Ask students to discuss strategies to optimize packet delivery in mobile networks.
	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/vOs7AUUVg-U 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: Wireless and Mobile Communication Topic: Introduction to Packet Delivery Process in Mobile Networks	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Describe the packet delivery process in mobile networks. b. Explain the role of various entities in packet delivery, including Mobile Nodes (MNs), Home Agents (HAs), Foreign Agents (FAs), and Correspondent Nodes (CNs). c. Analyse the challenges and optimizations in packet delivery in mobile networks.
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	- **Introduction** (5 minutes) - Ask questions. - Introduce the packet delivery process in mobile networks. - Highlight the importance of efficient packet delivery for mobile communication. - **Development** (30 minutes) - Overview of Packet Delivery: - Explanation of packet routing in mobile networks. - Differentiate between routing in wired and mobile networks. - Entities Involved: - Mobile Nodes (MNs), Home Agents (HAs), Foreign Agents (FAs), and Correspondent Nodes (CNs). - Roles and responsibilities of each entity in packet delivery. - Packet Delivery Process: - Registration process of Mobile Nodes. - Tunneling and encapsulation of data packets. - Routing and forwarding mechanisms. - Challenges and optimizations: - Handover latency. - Packet loss and retransmission. - Quality of Service (QoS) considerations. - Exercise (5 minutes) – - Ask students to discuss strategies to optimize packet delivery in mobile networks.
	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/vOs7AUUVg-U 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: Wireless and Mobile Communication Topic: Introduction to Mobile Ad-hoc Networks (MANETs)	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Define Mobile Ad-hoc Networks (MANETs) and understand their significance in wireless and mobile communication. b. Explain the characteristics, challenges, and applications of MANETs. c. Analyse routing protocols and security issues in MANETs.
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	- **Introduction** (5 minutes) - Ask questions. - Define Mobile Ad-hoc Networks (MANETs) and their role in wireless and mobile communication. - Highlight the importance of MANETs in scenarios where infrastructure-based networks are impractical or unavailable. - **Development** (30 minutes) - Characteristics of MANETs: - Self-organizing and self-configuring nature. - Dynamic topology. - Limited resources (e.g., bandwidth, battery power). - Challenges in MANETs: - Routing in the absence of fixed infrastructure. - Energy efficiency. - Security and privacy concerns. - Applications of MANETs: - Military applications. - Disaster recovery scenarios. - IoT and sensor networks. - Routing Protocols for MANETs: - Reactive protocols (e.g., AODV, DSR). - Proactive protocols (e.g., OLSR). - Hybrid protocols. - Security Issues: - Threats (e.g., black hole attacks, wormhole attacks). - Security mechanisms (e.g., authentication, encryption). Exercise (5 minutes) – - Ask students to discuss real-world scenarios where MANETs could be beneficial and the challenges they might encounter.
	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/acdn4Q6YCY4 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: Wireless and Mobile Communication Topic: Introduction to Routing Protocols	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Define routing protocols in the context of wireless and mobile communication. b. Explain various types of routing protocols used in wireless networks. c. Analyse the characteristics, advantages, and limitations of different routing protocols.
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	- **Introduction** (5 minutes) - Ask questions. - Define routing protocols and their importance in wireless and mobile communication. - Explain the significance of efficient routing for data transmission in dynamic and resource-constrained environments. - **Development** (30 minutes) - Overview of Routing Protocols: - Definition and role in wireless networks. - Classification based on behavior (proactive, reactive, hybrid). - Proactive Routing Protocols: - Characteristics and operation. - Advantages and disadvantages. - Reactive Routing Protocols: - On-demand route discovery process. - Scalability and overhead considerations. - Hybrid Routing Protocols: - Combination of proactive and reactive approaches. - Benefits and use cases. Exercise (5 minutes) – - Divide students into groups and assign each group a specific routing protocol to research. Ask them to present the characteristics, advantages, and limitations of their assigned protocol.
	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/gxJR_4NLB24 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: Wireless and Mobile Communication Topic: Introduction to Mobile TCP	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Define Mobile TCP and understand its significance in wireless and mobile communication. b. Explain the challenges faced by TCP in mobile networks and the adaptations made for mobile TCP. c. Analyse the performance and limitations of Mobile TCP in different scenarios.
Teaching Aids (if any)	a. PowerPoint Presentation

Teaching Development	- **Introduction** (5 minutes)
	- Ask questions.
	- Define Mobile TCP and its role in wireless and mobile communication.
	- Highlight the importance of TCP adaptations for efficient data transmission in dynamic and lossy wireless environments.
	
	- **Development** (30 minutes)
	- Challenges for TCP in Mobile Networks:
	  - High latency and variable delay.
	  - Packet loss and corruption.
	  - Bandwidth fluctuations.
	- Adaptations for Mobile TCP:
	  - TCP variants optimized for mobile networks (e.g., TCP Vegas, TCP Westwood).
	  - Split-TCP and TCP/IP split-connection techniques.
	  - Cross-layer optimizations.
	- Performance Evaluation:
	  - Comparison of traditional TCP and Mobile TCP in terms of throughput, delay, and fairness.
	  - Impact of mobility on TCP performance.
	
	Exercise (5 minutes) –
	- Divide students into groups and ask them to discuss real-world scenarios where Mobile TCP adaptations could improve performance in mobile networks.

	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://www.youtube.com/watch?v=gI4QUiaNvjI&pp=ygUvbW9iaWxlIFRDUCBJTiBXSVJFTEVTUyBhbmQgbW9iaWxlIGNvbW11bmljYXRpb24%3D 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: Wireless and Mobile Communication** **Topic: Introduction to** Wireless Application Protocols	**Course No.: ECE-601**

Objectives	At the end of the lesson the student shall be able to: a. Define Wireless Application Protocols (WAP) and understand their role in wireless and mobile communication. b. Explain the architecture, components, and functionalities of WAP. c. Analyse the advantages, challenges, and applications of WAP in mobile environments.
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	- **Introduction** (5 minutes) - Ask questions. - Define Wireless Application Protocols (WAP) and its significance in wireless and mobile communication. - Highlight the importance of standardized protocols for enabling mobile access to internet services. - **Development** (30 minutes) - Overview of WAP: - Definition and purpose. - Evolution and standardization. - Advantages and Challenges: - Advantages of WAP in enabling mobile internet access. - Challenges such as limited bandwidth, device compatibility, and security concerns. - Applications of WAP: - Mobile web browsing. - Mobile commerce (m-commerce). - Location-based services. - Exercise (5 minutes) – - Divide students into groups and ask them to discuss potential improvements or alternative approaches to overcome the challenges associated with WAP.
	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video Lecture https://youtu.be/DPcqnhtvYm8 https://youtu.be/r3-ooXTUBzY 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: Wireless and Mobile Communication Topic: Introduction to GSM	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. familiarization with the standards of Wireless systems b. understand the basics of Global System for Mobile (GSM)
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. - What do you mean by wireless systems? - What is a standard? - Why do you think standards are important in wireless system? - What is the need of standards in wireless communication? 2. **Development** (30 minutes) Introduction to GSM Services provided by GSM Main features of GSM 3. Exercise (5 minutes) – Ask students to mention the advantages and applications GSM
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video https://youtu.be/bur9hq_abog 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: Wireless and Mobile Communication Topic: Introduction to GSM Architecture	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. familiarization with the standards of Wireless systems b. understand the basics of Global System for Mobile (GSM) c. understand the architecture of GSM
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. What do you mean by GSM? What are the services provided by GSM? List the features of GSM 2. **Development** (30 minutes) Introduction to GSM Architecture of GSM Block diagram of GSM architecture Explain various blocks of GSM architecture 3. Exercise (5 minutes) – Ask students to mention the main blocks of GSM and explain the function of HLR, VLR in GSM system
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video https://youtu.be/bur9hq_abog 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: Wireless and Mobile Communication Topic: Introduction to GSM Channels	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Familiarize with the GSM channel b. Understand the functionality of different types of GSM channels
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. List the features of GSM Mention the service provided by GSM List the channels of GSM 2. **Development** (30 minutes) Introduction to GSM Channels Different types of GSM Channels • Logical Channels • Types of Logical Channel • Traffic Channels • Types of Traffic Channel 3. Exercise (5 minutes) – Ask students to summarize the topic.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video https://youtu.be/bur9hq_abog 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. 41	Course Name: Wireless and Mobile Communication Topic: Introduction to CDMA & its Features	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Familiarization with the concept of CDMA Digital Cellular standard (IS-95) b. Understanding of various features of IS-95
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. - What do you mean by CDMA - What is the significance of using CDMA over TDMA 2. **Development** (30 minutes) Introduction to CDMA system Introduction to IS-95 standard Features of IS-95 Advantages of IS-95 3. Exercise (5 minutes) – Ask students to explain the advantages and applications of IS-95
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video https://youtu.be/EDDEsX7vaII 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. 42	Course Name: Wireless and Mobile Communication Topic: Introduction to CDMA & its Features	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Familiarization with the concept of CDMA Digital Cellular standard (IS-95) b. Understanding of various types of CDMA Channels
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. - What do you mean by CDMA - What is the significance of using CDMA over TDMA 2. **Development** (30 minutes) Introduction to CDMA system Introduction to IS-95 channel types Frame structure of CDMA frame Types of CDMA Channels and its functions 3. Exercise (5 minutes) – Ask students to explain the advantages and applications of IS-95
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video https://youtu.be/EDDEsX7vaII 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. 43	Course Name: Wireless and Mobile Communication Topic: Introduction to CDMA forward channel	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Understanding of various types of CDMA Channels b. Articulate the working of CDMA Forward channel
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. Frame structure of CDMA frame Types of CDMA Channels and its functions 2. **Development** (30 minutes) Frame structure of CDMA frame CDMA Forward channel • Pilot Channel • Synchronization Channel • Paging Channel • Traffic Channel 3. Exercise (5 minutes) – Ask students to explain the working of traffic channel in detail
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video https://youtu.be/EDDEsX7vaII 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. 44	Course Name: Wireless and Mobile Communication Topic: Introduction to CDMA reverse channel	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Understanding of various types of CDMA Channels b. Articulate the working of CDMA reverse channel
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. Explain CDMA Forward channel • Pilot Channel • Synchronization Channel • Paging Channel • Traffic Channel 2. **Development** (30 minutes) CDMA Reverse channel Structure CDMA Channel working • Access Channel • Reverse Traffic Channel 3. Exercise (5 minutes) – Ask students to explain the working of traffic channel in detail
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video https://youtu.be/EDDEsX7vaII 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. 45	Course Name: Wireless and Mobile Communication Topic: Introduction to Bluetooth	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Familiarization with the various standards used in wireless system b. Understanding of Bluetooth standards used in wireless systems
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. What is Bluetooth? Where do you use it? 2. **Development** (30 minutes) Introduction to Bluetooth standard Architecture of Bluetooth standard Features and advantages of Bluetooth 3. Exercise (5 minutes) – Ask students to explain the advantages and applications of various wireless standards. Ask students to draw the structure of a Scatternet.
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video https://youtu.be/vjhp0zTXEsc https://youtu.be/zwUk1jjEoZk 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. 46	Course Name: Wireless and Mobile Communication Topic: Introduction to Wi-Fi	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Familiarization with the various standards used in wireless system b. Understanding of Bluetooth standards used in wireless systems
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. What is Wi-Fi? What are the advantages of using Wi-Fi over Bluetooth 2. **Development** (30 minutes) Introduction to Wi-Fi standard Features of standard Applications and advantages of Wi-Fi standard 3. Exercise (5 minutes) – Ask students to explain the advantages and applications of various wireless standards. Ask students to discuss the applications of Wi-Fi
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video https://youtu.be/vjhp0zTXEsc https://youtu.be/QhKIaK4ReUA 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. 47	Course Name: Wireless and Mobile Communication Topic: Introduction to Wi-Max	Course No.: ECE-601

Objectives	At the end of the lesson the student shall be able to: a. Familiarization with the various standards used in wireless system b. Understanding of Wi-Max standards used in wireless systems
Teaching Aids (if any)	a. PowerPoint Presentation
Teaching Development	1. **Introduction** (5 minutes) - Ask questions. What is Wi-Fi? What are the advantages of using Wi-Fi over Bluetooth 2. **Development** (30 minutes) Introduction to WiMAX standard Features of standard Applications and advantages of WiMAX standard 3. Exercise (5 minutes) – Ask students to explain the advantages and applications of various wireless standards. Ask students to discuss the applications of Wi-Fi
Closure	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Video https://youtu.be/vjhp0zTXEsc https://youtu.be/5j7jc3blPNw 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