LECTURE PLAN FOR IoT ADVANCED SOLUTION HSSC I

Branch Name: _____

Date For Start of Session: _____

Lecture #	Contents	SLO Reference
	1st Term EXAMS	—
51	The teacher will explain how to build a client-server architecture using CoAP for IoT applications. The teacher will describe the benefits of CoAP in constrained environments.	[SLO: IoTF-11-C-12]
52	The students will perform practical work by developing and deploying an IoT system on a cloud platform. The teacher will guide them through the setup and integration process.	[SLO: IoTF-11-C-13]
53	The teacher will explain how to implement temperature and humidity sensing for IoT systems. The teacher will describe how environmental sensors work and how they integrate with IoT systems.	[SLO: IoTF-11-B-12]
54	The students will perform practical work by programming a Raspberry Pi to collect and analyze temperature data. The teacher will guide them in using Python for data processing.	[SLO: IoTF-11-B-10]
55	The teacher will explain how to develop an IoT application that uses real-time data from sensors. The teacher will describe how real-time data improves decision-making and automation in IoT systems.	[SLO: IoTF-11-D-01]
56	The students will perform practical work by analyzing IoT sensor data using machine learning techniques. The teacher will guide them through using Python libraries to implement basic ML algorithms.	[SLO: IoTF-11-D-01]
57	The teacher will explain how to create a predictive model based on IoT sensor data. The teacher will describe the role of predictive analytics in IoT applications.	[SLO: IoTF-11-D-01]
58	The students will perform practical work by developing a smart irrigation system using IoT sensors. The teacher will guide them in programming the system to manage water distribution.	[SLO: IoTF-11-A-02]
59	The teacher will explain how to create a simple home automation system with IoT sensors and microcontrollers. The teacher will describe the components and their roles in the system.	[SLO: IoTF-11-A-03]
60	The students will perform practical work by connecting IoT devices to a cloud platform for remote monitoring. The teacher will guide them through the steps of cloud setup and device integration.	[SLO: IoTF-11-C-13]

61	The teacher will explain how to analyze IoT data from sensors using real-time cloud analytics. The teacher will describe how cloud platforms can enhance IoT systems by processing large volumes of data.	[SLO: IoTF-11-D-01]
62	The students will perform practical work by developing a system for tracking IoT device status and health. The teacher will explain how to set up monitoring systems for IoT devices.	[SLO: IoTF-11-E-01]
63	The teacher will explain the role of edge computing in scaling IoT systems. The teacher will describe how processing at the edge enhances performance and reduces latency.	[SLO: IoTF-11-E-01]
64	The teacher will describe how to configure Zigbee for building a sensor network. The teacher will elaborate on the importance of Zigbee in low-power, short-range communications.	[SLO: IoTF-11-C-08]
65	The students will perform practical work by building a cloud-connected temperature monitoring system using IoT sensors. The teacher will guide them in setting up the cloud and sensors.	[SLO: IoTF-11-C-05]
67	The teacher will explain how to use RESTful APIs to connect IoT devices to web applications. The teacher will describe the benefits of using RESTful architecture in IoT.	[SLO: IoTF-11-D-06]
68	The students will perform practical work by creating a mobile interface for an IoT system using a custom web page. The teacher will guide them in integrating the IoT system with the web interface.	[SLO: IoTF-11-D-05]
69	The teacher will explain how to deploy a custom broker server for IoT communication. The teacher will describe how brokers enable message exchanges between IoT devices.	[SLO: IoTF-11-C-04]
70	The students will perform practical work by learning how to handle large amounts of IoT data efficiently. The teacher will explain cloud storage and data processing techniques.	[SLO: IoTF-11-E-01]
71	The teacher will explain how to program a Raspberry Pi to control IoT devices through the internet. The teacher will describe how remote access improves IoT device management.	[SLO: IoTF-11-B-10]
72	The teacher will explain how to develop a user interface for controlling IoT devices remotely. The teacher will elaborate on the importance of creating intuitive interfaces for IoT users.	[SLO: IoTF-11-D-04]
73	The teacher will describe various cloud platforms for IoT integration, such as AWS, Particle, and Blynk. The teacher will explain their roles and features.	[SLO: IoTF-11-C-13]

74	The students will perform practical work by building a multi-sensor network using ESP8266 and Raspberry Pi. The teacher will guide them in connecting multiple devices to the network.	[SLO: IoTF-11-B-13]
75	The teacher will explain the importance of using IoT communication protocols (MQTT, CoAP) for device communication. The teacher will describe how each protocol is suited to specific IoT needs.	[SLO: IoTF-11-C-11]
76	The students will perform practical work by designing a system for remote control of home appliances using IoT. The teacher will guide them in setting up the IoT devices and programming the system.	[SLO: IoTF-11-A-02]
77	The teacher will explain security considerations for IoT systems. The teacher will describe how to secure IoT networks and devices against potential threats.	[SLO: IoTF-11-A-03]
78	The students will perform practical work by designing a smart home IoT system using Raspberry Pi and ESP8266. The teacher will guide them through the complete setup, from sensors to cloud connection.	[SLO: IoTF-11-C-03]
79	**Preparation For 2nd Term Exams**	
80	**Preparation For 2nd Term Exams**	
81-90	**2nd Term EXAMS**	
91	The teacher will explain how to implement a weather station using IoT sensors and microcontrollers. The teacher will describe how to collect, process, and display weather data.	[SLO: IoTF-11-A-02]
92	The students will perform practical work by integrating a weather station with an IoT platform. The teacher will explain how to display weather data on a cloud platform.	[SLO: IoTF-11-C-05]
93	The teacher will explain how to work with cloud IoT platforms like Arduino Cloud for device management. The teacher will describe the key features and capabilities of these platforms.	[SLO: IoTF-11-C-13]
94	The students will perform practical work by analyzing IoT data from sensors using real-time cloud analytics. The teacher will explain how cloud analytics help in improving IoT system efficiency.	[SLO: IoTF-11-D-01]
95	The teacher will explain the role of machine learning in IoT data analysis. The teacher will describe how IoT data can be analyzed to detect patterns and make predictions.	[SLO: IoTF-11-D-01]
96	The students will perform practical work by developing a machine learning model based on IoT sensor data. The teacher will guide them in using ML libraries to implement the model.	[SLO: IoTF-11-D-01]
97	The teacher will explain how IoT can be used for smart agriculture solutions. The teacher will describe the components of a smart irrigation system and its benefits.	[SLO: IoTF-11-A-02]

98	The students will perform practical work by designing a smart irrigation system using IoT sensors. The teacher will guide them in programming the system to manage water distribution.	[SLO: IoTF-11-A-03]
99	The teacher will explain how IoT is applied in smart cities, focusing on traffic management and energy efficiency. The teacher will describe how IoT is shaping urban landscapes.	[SLO: IoTF-11-A-02]
100	The students will perform practical work by implementing a smart city application using IoT sensors	[SLO: IoTF-11-C-13]
	and cloud connectivity. The teacher will guide them in setting up a traffic monitoring system.	
101	The teacher will describe how IoT systems interact with other technologies like AI and blockchain. The teacher will explain how these integrations improve the security and intelligence of IoT systems.	[SLO: IoTF-11-A-03]
102	The students will perform practical work by integrating AI algorithms into IoT systems. The teacher will guide them in using AI for smart decision-making in IoT applications.	[SLO: IoTF-11-A-02]
103	The teacher will explain how IoT is applied in healthcare, focusing on patient monitoring and smart medical devices. The teacher will describe future innovations in health IoT.	[SLO: IoTF-11-A-03]
104	The students will perform practical work by designing a healthcare IoT application using sensors for patient monitoring. The teacher will guide them in integrating the system with cloud platforms.	[SLO: IoTF-11-C-05]
105	The teacher will explain how IoT is used in supply chain management, focusing on asset tracking and warehouse automation.	[SLO: IoTF-11-A-02]
106	The students will perform practical work by designing an IoT system for supply chain management. The teacher will guide them in using sensors and RFID for asset tracking.	[SLO: IoTF-11-A-03]
107	The teacher will explain the role of IoT in environmental monitoring, including air quality and water management. The teacher will describe how IoT can help in creating sustainable solutions.	[SLO: IoTF-11-A-03]
108	The students will perform practical work by designing an IoT system for environmental monitoring. The teacher will guide them in collecting and analyzing environmental data.	[SLO: IoTF-11-B-12]
109	The teacher will explain the integration of IoT with big data analytics. The teacher will describe how big data is used to optimize IoT systems for real-time decision-making.	[SLO: IoTF-11-D-01]
110	The students will perform practical work by developing an IoT system that collects big data and sends it to a cloud analytics platform.	[SLO: IoTF-11-D-02]

111	The teacher will describe the future of IoT, emphasizing advancements in 5G, AI, and blockchain integration. The teacher will explain how these trends will shape the IoT landscape.	[SLO: IoTF-11-A-03]
112	The students will perform practical work by building an IoT system based on the latest trends like 5G and AI integration.	[SLO: IoTF-11-A-03]
113	The teacher will explain how IoT can improve efficiency in manufacturing through predictive maintenance and	[SLO: IoTF-11-A-02]
	real-time monitoring.	
114	The students will perform practical work by implementing an IoT system for predictive maintenance in a manufacturing scenario.	[SLO: IoTF-11-A-02]
115	The teacher will explain how security and privacy concerns are addressed in IoT systems. The teacher will describe the latest advancements in securing IoT networks.	[SLO: IoTF-11-A-03]
116	The students will perform practical work by securing an IoT network, focusing on encryption and data protection techniques.	[SLO: IoTF-11-A-03]
117	The teacher will explain the challenges of managing large-scale IoT systems, focusing on scalability and data storage.	[SLO: IoTF-11-E-01]
118	The students will perform practical work by designing scalable IoT systems that can handle large data volumes. The teacher will guide them in setting up distributed systems for scalability.	[SLO: IoTF-11-E-01]
119	The teacher will explain the concept of automation in IoT systems. The teacher will describe how automated systems improve operational efficiency.	[SLO: IoTF-11-A-02]
120	The students will perform practical work by building an automated IoT system that responds to environmental changes.	[SLO: IoTF-11-A-02]
121	The teacher will explain how IoT is used in smart grids for energy management. The teacher will describe the benefits of IoT in reducing energy consumption.	[SLO: IoTF-11-A-03]
122	The students will perform practical work by implementing a smart grid system using IoT. The teacher will guide them in using IoT sensors for real-time energy management.	[SLO: IoTF-11-A-02]
123	The teacher will describe the role of IoT in smart cities, focusing on traffic management and public safety.	[SLO: IoTF-11-A-02]
124	The students will perform practical work by designing a smart city IoT system for traffic monitoring and public safety. The teacher will guide them in connecting sensors and cloud platforms.	[SLO: IoTF-11-C-13]

125	The teacher will explain how to integrate all the concepts learned in the course to design an end-to-end IoT solution. The teacher will describe the steps for building a complete IoT ecosystem.	[SLO: IoTF-11-A-11]
126	**Revision & Practice**	
	FINAL EXAMS	