










Advanced Robotics (IoT) Tier 3


Session No	Course Contents
Session 1	 Introduction to IoT Concepts Get ready to dive into the fascinating world of IoT! Discover how everyday devices come to life through real-time applications that are shaping our future!
Session 2	 IoT Architecture and Layers Explore how a Smart Door works and uncover the secrets behind the 4 amazing layers that make up the Internet of Things!
Session 3	 Cracking IoT Protocols Ever wondered how devices talk to each other? Learn how HTTP & HTTPS work—and even use Wireshark to see that communication live!
Session 4	 Binary & Introduction to Gates Step into the digital world by mastering Binary Numbers! Convert between Binary and Decimal like a tech wizard!
Session 5	 Unlocking Logic Gates Discover the building blocks of every digital device! Understand basic and universal Logic Gates with fun, interactive activities.
Session 6	 Half Adder Magic See how logic gates can do math! Learn how a Half Adder adds binary numbers and outputs the results with Sum and Carry.
Session 7	 AC vs DC & Ohm's Law Made Fun Explore the exciting world of electricity! Understand the difference between AC and DC, and how voltage, current, and resistance play together using Ohm's Law!

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Session 8	 Series & Parallel Circuits Adventure Hands-on fun with circuits! See what happens when you connect resistors in different ways and how it changes the flow of electricity!
Session 9	 Show & Tell Time to shine! Share what you've built, and get inspired by your fellow innovators!
Session 10	 Unbox the Fun! Unbox your own IoT Innovator Kit and set up your programming environment—let's get the tech journey started!
Session 11	 Meet Your Microcontroller - NodeMCU Say hello to NodeMCU! Start your first LED blink project and bring your code to life—virtually and physically!
Session 12	 MicroPython vs Embedded C++ Discover how MicroPython makes coding simpler! Compare variable declaration with C++ in a way that's easy and exciting to learn.
Session 13	 Code That Decides - If-Else & Loops Make your programs smart! Learn how your code can make decisions and repeat actions using if-else conditions and loops.
Session 14	 Mastering Lists & Tuples Get organized like a pro! Learn how Lists and Tuples help you store and manage data effortlessly in MicroPython.
Session 15	 Set It Up with Sets Unlock the power of Sets in MicroPython! Learn how to manage unique data and why sets are super useful in your code.
Session 16	 Functions: Your Coding Toolbox Functions make your code neat and powerful! Learn different types and create your own reusable code blocks!

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Session 17	 Build Your Own Programming Module Go beyond basics! Create your very own custom module and make your programs modular and smarter!
Session 18	 Dive into Classes & Objects Step into the world of Object-Oriented Programming! Learn how to build powerful code using classes and objects.
Session 19	 Light It Up: Digital Output (LED) Turn on lights with your code! Build a smart traffic light system using LED and hardware—it's real and it works!
Session 20	 Motion Detector: Digital Input (PIR Sensor) Become a home-security hero! Use the PIR sensor to detect movement and trigger actions using real hardware.
Session 21	 Analog Power: Potentiometer Sensor Control the power! Play with analog input using a potentiometer and see how sensors respond to turning knobs.
Session 22	 Servo Motor in Action Discover how servo motors work—and build mini robotic arms or gadgets that move with your commands!
Session 23	 Show & Tell: Student Creations Time to shine! Share what you've built, and get inspired by your fellow innovators
Session 24	 MoodPot (Part 1) - Project Explanation & Hardware Setup Build a smart plant pot using Soil Moisture sensors, LEDs, a Buzzer, and OLED to alert you when your plant needs water.
Session 25	 MoodPot (Part 2) - Creating Custom Module Learn to import libraries, initialize pins, and set up a custom module for efficient sensor, LED, and display management.

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<p>Session 26</p>	<p> MoodPot (Part 3) - Creating Functionalities in Custom Module Soil Moisture Sensor, Buzzer, LED</p> <p>Create functionalities for the soil moisture sensor, buzzer, and LED to automatically respond to your plant's needs.</p>
<p>Session 27</p>	<p> MoodPot (Part 4) - Display Message in OLED</p> <p>Create a function to show customized messages on the OLED, keeping you updated on your plant's needs.</p>
<p>Session 28</p>	<p> MoodPot (Part 5) - Implementing Check and Alert Functionality</p> <p>Monitor soil moisture and trigger alerts with the buzzer and LED when your plant needs attention.</p>
<p>Session 29</p>	<p> MoodPot (Part 6) - Importing Custom Module in Main Program</p> <p>Import your custom module into the main program and test it to ensure everything works smoothly.</p>
<p>Session 30</p>	<p> WeatherXcel Weather Station - Functional Prototype (Part 1)</p> <p>Get started with the WeatherXcel project! Learn how to set up the hardware and explore the basics of building your own weather station.</p>
<p>Session 31</p>	<p> WeatherXcel Weather Station - Functional Prototype (Part 2)</p> <p>Set up WiFi connectivity and learn how to detect temperature and humidity with your weather station for real-time data monitoring.</p>
<p>Session 32</p>	<p> WeatherXcel Weather Station - Functional Prototype (Part 3)</p> <p>Learn how to write weather data with local time into a CSV file for easy storage and analysis.</p>

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<p>Session 33</p>	<p> WeatherXcel Weather Station - Functional Prototype (Part 4) Create a function to manage push button functionality, activating or deactivating the sensor and controlling the data logging process with single or double presses.</p>
<p>Session 34</p>	<p> WeatherXcel Weather Station - Functional Prototype (Part 5) Integrate Google Sheets with your weather station by linking a script that logs data directly to the sheet, enabling seamless data transfer.</p>
<p>Session 35</p>	<p> WeatherXcel Weather Station - Functional Prototype (Part 6) Design and style the weather station interface using HTML and CSS, creating an attractive and functional layout to display weather data.</p>
<p>Session 36</p>	<p> WeatherXcel Weather Station - Functional Prototype (Part 7) Use JavaScript to fetch data from the backend and dynamically update the webpage in real-time, ensuring the latest weather information is always displayed.</p>
<p>Session 37</p>	<p> WeatherXcel Weather Station - Functional Prototype (Part 8) Use Chart.js to create an interactive live chart that visually displays real-time weather data, updating dynamically as new information arrives.</p>
<p>Session 38</p>	<p> WeatherXcel Weather Station - Functional Prototype (Part 9) Debug and test the system to identify and resolve issues, ensuring smooth functionality and accurate performance of the weather station.</p>
<p>Session 39</p>	<p> Show & Tell: Your Functional Prototype Show off your full project—fetch weather data, add search features, and impress everyone with your working web app!</p>

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Session 40	 Unboxing Moon IoT Kit & Meet the MoonIoT Hub App Let's blast off! Unbox your amazing Moon IoT Kit and explore the powerful MoonIoT Hub Mobile App that will connect your ideas to the real world!
Session 41	 Installation and Setup of MoonIoT App & Adding Library Modules Install the MoonIoT app, create a new device, and import necessary library modules to get started with your IoT projects.
Session 42	 App-Driven LED Lighting System (Mini Prototype -1): Set up the LED hardware and write the program to control its functionality, ensuring proper operation and integration.
Session 43	 App-Driven LED Lighting System (Mini Prototype -2): Debugging and Testing LED with MoonIoT App Troubleshoot and test your LED system to ensure smooth operation and connectivity using the MoonIoT app.
Session 44	 Smart Door System Assembly and Integration Assemble your smart door using logo technic sets to create a secure and functional entry system.
Session 45	 Smart Door System : Prototyping Session 1 Set up the hardware for your smart door and create a device in the MoonIoT app to control and monitor it remotely.
Session 46	 Smart Door System : Prototyping Session 2 Write the code for your smart door and test its functionality by monitoring the output through the MoonIoT app.
Session 47	 Smart Thermostat System : Prototyping Session 1 Set up the hardware for your smart thermostat and create the device in the MoonIoT app to control and monitor temperature efficiently.
Session 48	 Smart Thermostat System : Prototyping Session 2 Write the code for your smart thermostat and test its performance by monitoring the output through the MoonIoT app.

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Session 49	 Final Project Brainstorming Collaborate to brainstorm and finalize project ideas, refining concepts for a successful final project execution.
Session 50	 System Build & Setup for Final Project Assemble the hardware and implement the program code to bring your final project to life, ensuring seamless functionality.
Session 51	 Testing & Debugging : Final Checks Final check! Make sure everything works perfectly before you take the spotlight with your working smart prototype.
Session 52	 Show & Tell : Present Your Final Smart Prototype! Time to shine! Show off your amazing project to friends, family, and fellow creators. You've built something incredible—and it works!

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