

**Internet of Things
(Winter Training Program)
4 Weeks/30 Days**

“PRESENTED BY”



Explore > Innovate > Enjoy — Technologies Pvt. Ltd.

An ISO 9001 : 2008 Certified Company

Accredited by:



**INTERNATIONAL
ACCREDITATION
ORGANIZATION
HOUSTON U.S.A.**

RoboSpecies Technologies Pvt. Ltd.

Office: W-53G, Sector 11, NOIDA

Contact us:

Email: stp@robospecies.com

Website: www.robospecies.com

Office: +91-120-4245860/

8510044806

WINTER TRAINING PROGRAM

Internet of Things

Course Name	: Internet of Things
Certification	: By RoboSpecies Technologies Pvt. Ltd. Accredited by International Accreditation Organization, Houston, U.S.A.
Study Material	: Books & CDs Free to each participant
Robotics Toolkit	: Free to Each Participant

Projects: 40 Projects Covered in 30 Days

Fees & Duration

1. For Internet of Things (**Basic**)
Fees : ₹ 7990/- per candidate
Duration : 30 Days/4 Weeks

BASIC MODULE – Internet of Things	
DAYS	TOPICS
Day 1	Theory Introduction to Internet of Things <ul style="list-style-type: none">• What is internet?• The technology “Internet of Things”.• Usefulness of IoT.• Professional benefits.• Applications of IoT.• New and Upcoming Technologies.
Day 2	Theory The “Things” explanation. <ul style="list-style-type: none">• Embedded systems• Input and Output devices.• Analog and Digital sensors.• Actuators. Practical <ul style="list-style-type: none">• To Figure out input and output devices.• Which device is analog and which one is digital?• Sensor and actuator applications.

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Day 3	Theory <ul style="list-style-type: none">• Introduction to embedded system• Components of embedded systems.• The controlling unit “Microcontroller”.• Hardware parts.
Day 4	Theory <ul style="list-style-type: none">• Sensors, Demystified.• Sensors specification.• How to use sensors.• Types of sensors. Practical <ul style="list-style-type: none">• Calibration of sensors.
Day 5	Theory <ul style="list-style-type: none">• Integrating peripherals.• Peripherals explanation.• Understanding communication protocols.• Serial and parallel communication.• UART, SPI, I2C communication. Practical <ul style="list-style-type: none">• Receiving data from sensors serially.
Day 6	Theory <p>Interfacing arduino and sensors</p> <ul style="list-style-type: none">• Explanation of software and hardware.• The Arduino IDE.• Programming the sensors. Practical <ul style="list-style-type: none">• Reading the values from sensors.
Day 7	PROJECT

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DAYS	TOPICS
Day 8	<p>Theory</p> <p>Introduction to internet protocols</p> <ul style="list-style-type: none">• Transmission control/ Internet Protocol.• Used datagram protocol.• Network topologies.• Understanding IPv4 & IPv6.
Day 9	<p>Theory</p> <ul style="list-style-type: none">• Welcoming SMART HOME CONCEPT.• Motors• IR Sensors• Temperature sensor• LDR• Relay• Water level indicator. <p>Practical</p> <ul style="list-style-type: none">• Interface Motor Driver with IR sensor.• Calibration of IR sensors<ul style="list-style-type: none">• What is it?• Why is it Required?
Day 10	<p>Theory</p> <p>Creating web page using arduino programming with basic HTTP</p> <ul style="list-style-type: none">• Preface to Hyper Text Markup Language coding• Elements of HTML.• HTTP. <p>Practical</p> <ul style="list-style-type: none">• Creating the web page
Day 11	<p>Video sessions</p>

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DAYS	TOPICS
Day 12	<p>Theory</p> <ul style="list-style-type: none"> • Introduction to Basic Shield. • What is the requirement of Basic Shield? • Operation of Analog and Digital Signals. • 8 Bit and 10 Bit Concept. <p>Practical</p> <ul style="list-style-type: none"> • Interfacing Basic Shield with Arduino. • Lighting up several LED's in a Wishful Pattern. • Working on Switch, BUZZER and implementing with Arduino for better grasping of concepts. Interfacing Motors through sensors via Arduino.
Day 13	Completion of led blink over internet.
Day 14	Competition, Doubts & Practical Session
Day 15	PROJECT
Day 16	<p>Theory</p> <ul style="list-style-type: none"> • Serial and Parallel Communication. • Hello to Analog I/P and O/P. • Introduction to ADC. <p>Practical</p> <ul style="list-style-type: none"> • Interfacing Potentiometer and LDR with ARDUINO. • Interfacing Motor Driver with ARDUINO. • Speed Control of Motors using PWM.
Day 17	<p>Theory</p> <ul style="list-style-type: none"> • Introduction to Temperature sensor. • Applications of temperature sensor. <p>Practical</p> <ul style="list-style-type: none"> • Testing of temperature sensor. • Integrating of temperature sensor with microcontroller. • Temperature control over the internet.
Day 18	<p>Theory</p> <ul style="list-style-type: none"> • Introduction to LDR. • Advanced applications of LDR. <p>Practical</p> <ul style="list-style-type: none"> • Testing of LDR. • Integrating LDR with microcontroller. • Light control over internet.
Day 19	<p>Theory</p> <ul style="list-style-type: none"> • Introduction to RELAYS. • Pin description of various relays. • How to check relays? <p>Practical</p> <ul style="list-style-type: none"> • Integration of relays with microcontroller. • Integrating Digital Signals. • Switching of relays to control temperature and light over the internet.

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DAYS	TOPICS
Day 20	<p>Theory</p> <ul style="list-style-type: none">• Introduction to Water level indicator.• Application of water level indicator. <p>Practical</p> <ul style="list-style-type: none">• Integration with microcontroller.• Getting water levels onto internet.
Day 21	PROJECT
Day 22	PROJECT
Day 23	<p>Theory</p> <ul style="list-style-type: none">• IoT Health Care• Temperature measurement.• Pulse detection.• Axis control.• Display.
Day 24	<p>Theory</p> <ul style="list-style-type: none">• LCD (Liquid Crystal Display). <p>Practical</p> <ul style="list-style-type: none">• Making Connections of LCD with Arduino.• Generating name and number pattern.• Generating custom characters.
Day 25	<p>Theory & Practical</p> <ul style="list-style-type: none">• Temperature measurement using temperature sensor.• Getting AID for temperature variations.• Feeding temperature over the internet.• Displaying the temperature on the LCD.
Day 26	<p>Theory & Practical</p> <ul style="list-style-type: none">• Introduction to PULSE SENSOR.• Pulse measurement.• Introduction to Processing Command Window.• Generating graph of pulse on processing window.

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DAYS	TOPICS
Day 27	Theory <ul style="list-style-type: none">• ULTRASONIC SENSOR• Application of Ultrasonic Sensor. Practical <ul style="list-style-type: none">• Integrating with microcontroller• Distance measurement using Ultrasonic Sensor• Feeding data of distance over the internet.
Day 28	PROJECT
Day 29	Competition, Doubts & Practical Session
Day 30	Certificate Distribution Cum Farewell Ceremony

Number of Projects Covered in BASIC MODULE

1. Blink a LED using a switch
2. Glowing LEDs in pattern of your own choice.
3. Designing of RGB color pattern
4. Automatic light control system
5. Daily alarm clock
6. Flood control alarm system
7. Generation of MIDI tones
8. Intelligent blind stick
9. Automatic obstacle detection System
10. LDR based Darkness activation system
11. LDR based Light activation system
12. Voltage divider system
13. Automatic blinking of light
14. LED Control through Switch

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15. Dc motor speed control using PWM
16. Automatic speed controlled BOT
17. Digital display device
18. Automatic power control system
19. Traffic control system
20. Scroll strings on LCD
21. Automatic speed controlled BOT
22. Edge avoider BOT
23. Wall Follower BOT
24. Obstacle avoider BOT
25. Traffic control system
26. Visitor counting application
27. Scroll strings on LCD
28. Line follower BOT displaying the directions
29. Controlling buzzers and LED using serial communication
30. LED Blinking using Accelerometer
31. Gesture Recognition using Accelerometer
32. Motor Control using Accelerometer
33. Getting real world temperature using arduino
34. Controlling motors using temperature sensor.
35. Controlling gateways using temperature sensor.
36. Feeding data over the internet of temperature sensor.
37. Working with pulse sensor
38. Online update of heart rate
39. Controlling motors using relays
40. Controlling home appliances using relays
41. Feeding and reading the data of different home appliances over the internet.

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BASIC Module IoT Kit Content

- Arduino Uno Board (1)
- Wifi Board ESP8266 (1)
- Basic Shield (1)
- RoboSpecies Chassis (1)
- BO Motors (2)
- IR Sensor (1)
- Electronica Kit (1)
- Wheels (2)
- Caster Wheel (1)
- Screw driver (1)
- Screw packet (1)
- Single Strand Wires
- LCD Shield (1)
- Motor Driver board (1)
- Temperature Sensor (1)
- Light Control Sensor (1)
- Relay (1)
- Pulse Sensor (1)
- Ultrasonic Sensor (1)
- Robotics Made Easy-Robotic eBook (1)
- CD (1)
- Study Material.

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Why Internet of Things Training from RoboSpecies Technologies?

1. **Lot of Major Projects** will be covered in this training.
 - 20+20 Projects are covered in BASIC Module
 - 20+20+20 Project are covered in ADVANCE Module
 - 9 optional major projects.
2. Our syllabus is professionally designed to cover **Basic** as well as **Advance** aspects of Embedded Systems & Robotics
3. Each day of our training is well planned to provide you the **Theoretical** as well as **Practical** Knowledge of the module
4. Each day will come up with **New Practical's & Projects** which makes the training interesting and exciting.
5. Time to time **Practical Assignments** will be provided to the students, which will help them in doing practice at home.
6. **Revision Time & Query Sessions** are provided to the students which help them in clearing their all previous doubts.
7. **Exam** will be conducted at the end of **basic** as well as **Advance** module to test the knowledge level of the students.
8. Time for **Project Work** will be provided to the students, in which students will develop a project of their own choice. This will encourage **Innovative Ideas** among students.

Pre-Requisites

1. Basic knowledge of C\C++ Programming.
2. Basics of Electronics.
3. Eagerness to learn new innovative things.

Who Could Attend this Training?

- Students from B.E/B.Tech/M.Tech/Diploma (ECE/EEE/CSE/IT/MECH) can join this training.
- Anyone who have interest in this field and have pre-requisite knowledge