

12-Month Advance Robotics & IoT Course Outline

Official Course Roadmap

🌐 Website: Ts-Developers.com

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◆ Module 1: Electronics & Programming Basics (Months 1-2)

- Introduction to Robotics & Internet of Things (IoT)
- Basic Electronics (Voltage, Current, Resistance, Circuits)
- Components: Resistors, Capacitors, Sensors, LEDs
- Arduino Programming (C/C++ Basics)
- Mini Projects: LED Control, Sensor-based Circuits

◆ Module 2: Microcontrollers & Embedded Systems (Month 3)

- Arduino Advanced Programming
- Introduction to Microcontrollers
- Digital & Analog Inputs/Outputs
- Serial Communication
- Practical: Build Sensor-based Systems

◆ Module 3: IoT Fundamentals (Months 4-5)

- Introduction to IoT Architecture
- ESP8266 / ESP32 Programming
- WiFi & Network Communication
- Sending Data to Cloud
- Practical: Smart Device Control via Internet

◆ Module 4: Sensors & Actuators (Month 6)

- Types of Sensors (Temperature, Motion, Ultrasonic, etc.)
 - Actuators (Motors, Relays, Servos)
 - Interfacing Sensors with Microcontrollers
 - Real-world Applications
 - Project: Smart Automation System
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◆ **Module 5: Robotics Fundamentals (Month 7)**

- Introduction to Robotics Systems
- Motor Control (DC, Servo, Stepper)
- Robot Movement & Control Logic
- Line Following Robot
- Obstacle Avoidance Robot

◆ **Module 6: Advanced IoT Systems (Month 8)**

- IoT Platforms (Blynk, Firebase)
- Mobile App Integration
- Real-time Monitoring Systems
- Smart Home Automation
- Project: IoT-Based Smart Home System

◆ **Module 7: Communication Protocols (Month 9)**

- MQTT Protocol
- HTTP & REST APIs
- Bluetooth & RF Communication
- IoT Security Basics
- Practical: Device-to-Device Communication

◆ **Module 8: AI Integration with IoT (Month 10)**

- Introduction to AI in IoT
- Smart Decision Systems
- Basic Machine Learning Integration
- Automation using AI
- Project: Smart AI-based System

◆ **Module 9: Advanced Robotics Projects (Month 11)**

- Build Advanced Robots (Smart Car / Automation Bot)
- Integration of Sensors + IoT + Robotics
- Real-world Problem Solving
- Team-based Projects

◆ **Module 10: Final Project & Career Development (Month 12)**

- Final Robotics & IoT Capstone Project
- Portfolio Development (Projects Showcase)
- Freelancing & Startup Ideas
- Internship Opportunity in TS-Developers
- Final Presentation & Certification

