



Shaping Talents



Shaping Future

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Become a Certified  
Technology Expert



INTERNET OF THINGS  
IoT  
TRAINING

## Internet of Things IoT Training

### About EnhanceLearn

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EnhanceLearn offers you a complete career transition by providing training and placement programs for Students and Jobseekers looking for a Career Success. We provide best IT training and certification courses which is taken by professional certified experts. The training modules are designed as per the market requirement so that it helps student to conquer the Career Job Market and achieve their career goals with our placement assistance.



### About the Internet of Things IoT Training Course

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EnhanceLearn offers a comprehensive internet of Things IoT training course. You'll learn about the IoT introduction, significance, building your own IoT device, sensors, IoT communication, and security. This training can help you be a part of the IoT revolution underway around the globe. The course introduces advanced concepts and methodologies of IoT used for communication including new generation IoT-friendly applications, IoT frameworks and standards and physical layer protocols and service-rich cloud platforms. Our expert trainers will make you learn IoT how to design, build and deploy IoT solutions through Practical use cases and case studies.

### Why Take Internet of Things IoT Training Course?

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IoT is the latest trending technologies which are and would be used significantly by the big percentage of companies in various industries. Internet of Things is definitely the best choice for future career growth.

Very big Companies and Enterprises are using the Internet of Things for latest enhancements landing in more number of jobs in IoT.

Huge job roles and career opportunities for the trained IoT professionals are currently in the job market for those who are good in IoT technology, deployment, management and security.

An IoT certification can help you earn a big salary amount in dollars at an entry level position and expertise in IoT can obtain huge salaries in the job industry.

Fast-track your career to take on more lucrative job roles and take your career to the next level.

If you are interested in joining EnhanceLearn's best Training and Placement Program team, please reach our team here:

# Internet of Things IoT Training

## Course Content:

### Module 1: Introduction to the Internet of Things

- Introducing the Internet of Things
- Various types of devices connected to the internet
- Components of IoT devices
- Design considerations
- IoT device and physical world interfacing
- Hardware and software trade-offs
- IoT simulators
  - Openwsn
  - Cooja
- IoT and how the embedded systems work, working with Big Data, Cloud, Analytics
- Understanding IT and OT Convergence: Evolution of IIoT & Industry 4.0
- IoT Adoption
  - Market statistics
  - Early adopters
  - Roadmap
- Business opportunities: Product + Service model
  - Development, deployment and monetization of applications as service
- Use cases

### Module 2: IoT Architecture

- The IoT Stack Architecture
- Various components and layers
- Data processing and platform
- IoT OS like
  - Contiki
  - FreeRTOS
  - mbed
- Edge and the connected thing or device
- IaaS, SaaS, PaaS models
- Data management
- Middleware
- Device management
- Sensors
- Hardware/firmware
- Embedded devices / Development Boards
  - NodeMCU
  - Netduino for C#
  - Raspberry Pi 3

- Arduino Mega (ATMega2560) with USB cable
- AWS IoT Services
  - Device Registry
  - Authentication and Authorization
  - Device Gateway
  - Rules Engine
  - Device Shadow

### Module 3: Design and Development of IoT Systems

- IoT reference architectures
  - Standardization initiatives
  - Interoperability issues
- IoT design considerations
  - Architectures Device, Network and Cloud
  - Centralized vs distributed architectures
- Networks, communication technologies and protocols
- Smart asset management: Connectivity, Visibility, Analytics, Alerts

### Module 4: The Arduino Platform

- The open source IoT platform built using easy to use hardware and software
- Arduino physical board
- libraries
- the Integrated Development Environment
- Arduino Shields various operations like
  - heat and light sensing
  - GPS
  - UI display
- programming Arduino using C language
- controlling external devices using pins on the Arduino board

### Module 5: Arduino Interfacing

- The Arduino interface
- Reading inputs from various sources
- Providing an output

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- Working with sensors
- Deploying various types of sensors and connecting it to the Arduino
- Constant conversion between Analog and digital signals for information exchange between the physical and digital domains
- Signal conversion
- Arduino-specific shields
- Shields software libraries
- Real-time demo of Arduino interfacing

## Module 6: The Raspberry Pi Platform

- Introduction to Raspberry Pi
- Single-board computer
- Operating System
- User interface
- Advanced networking
- Deploying compute-intensive IoT
- Setting up the Raspberry Pi environment
- Python coding for the Raspberry Pi
- Deploying Python-based Integrated Development Environment
- Tracing and debugging Python code

## Module 7: Raspberry Pi Interfacing

- Interfacing the Raspberry Pi with the physical world
- Various input and output devices
- Various protocols like USB
- HDMI and Ethernet for information exchange
- Controlling physical devices like motors, sensors, thermostats, switches
- Converting Analog signal to digital signal and vice-versa
- Raspberry Pi expansion boards for building complex hardware setup
- Real-time demo of Raspberry Pi interfacing

## Module 8: IoT Sensors

- Introduction to IoT Sensors
- Sensors – Analog temperature sensor
- IR Proximity Sensor
- The role they play in getting the IoT systems work efficiently

- Micro-electromechanical systems revolutionizing IoT sensors
- The range of sensors including proximity, temperature, electric, mechanical, acoustics, acceleration, etc.
- Smart sensors to help streamline analytics and connectivity in the modern world

## Module 9: IoT Communication

- The vast array of communication and information exchange methodology for IoT
- Communication Modules
  - Bluetooth
  - Wi-Fi
  - Near Field Communication
  - ZigBee
  - Z-Wave
  - 5G and Iora
  - Cellular, Thread, etc.
- Various communication protocols
- Interoperability between various devices for a seamless system
- Real-time demo of IoT communication

## Module 10: IoT Programming

- Coding for the various components of the IoT system
- Micro-controller-based embedded system
- Building and testing it extensively
- Various programming aspects of interfacing with the physical world, system design, microcontrollers

## Module 11: IoT Security & Design

- Introduction to IoT design for end-to-end security
- Common vulnerabilities
- Hack-proof methods
- Security of information exchange and networking
- Error reporting
- Common vulnerabilities
- Centrally deployed software and firmware

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- Infrastructure to meet current and future demands
- Separate channel for security from regular updates, software testing
- Support and user on boarding
- Software testing, testing of third-party services
- Edge processing
- Secure data management
- Collection and retention
- Legal and regulatory compliances

### Module 12: Analytics

- Descriptive, Diagnostic, Predictive, and Prescriptive
- Analytics using Python advance packages:
  - NumPy
  - SciPy
  - Matplotlib
  - Pandas
  - Sci-kit learn
- CASE STUDIES AND ROADMAP
- Cold Chain monitoring
- Asset tracking using RFID and GPRS/GPS

### Module 13: IoT Projects

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