



INTERNET OF THINGS ROADMAP

PREREQUISITES:

- **Basic Electronics**

Get a quick revision of electrical components and their concepts :

[The Workings of Electrical Circuits | GeeksForGeeks](#)

[Brush up your Basic Electronics | TutorialsPoint](#)

- **Python**

[Video : Learn Python – Full Course for Beginners \[Tutorial \] | freeCodeCamp.org](#)

[Exploring Python | GeeksForGeeks](#)

[Python Examples and Problem Statements | Programiz](#)

PHASE 1 :

- **Edge Computing**

[What is Edge Computing? | TechTarget](#)

- **TF Lite and Micro controllers**

[TensorFlow Lite for Microcontrollers | TensorFlow](#)

[Train a Model and Run Inference using a Microcontroller | Tensor Flow](#)

- **Memory Organization**

[What is EEPROM? | RS](#)

[A Guide to EEPROM on Arduino | Arduino](#)

[The EEPROM Library | Arduino](#)

- **Edge Impulse**

[Edge Impulse](#)

[Getting Started | Edge Impulse Tutorials](#)

[Edge Impulse : Repositories | GitHub](#)

- **Cloud Computing**

[What is Cloud Computing? | Google Cloud](#)

[An Introduction to AWS IoT Core | AWS Startups Blog \(amazon.com\)](#)

[What are the different types of cloud computing? | Google Cloud](#)

[What is IaaS \(Infrastructure as a Service\)? | Google Cloud](#)

- **Arduino Cloud and How are these used**

[Getting Started with Arduino Cloud | Arduino Documentation](#)

[Arduino / C++ | Arduino Documentation](#)

[ESP32 / ESP8266 | Arduino Documentation](#)

[Cloud Editor | Arduino Documentation](#)

Video: [Arduino IoT Cloud Fundamentals | 2024 Step-by-Step Guide \(youtube.com\)](#) (With 2 demo projects)

PHASE 2 :

- **Networking**

[Basics of Computer Networking - GeeksforGeeks](#)

- **Protocols and Tools to Visualize**

[What is TCP/IP? \(youtube.com\)](#)

[How DNS works. What connects websites to IP addresses?](#)

[What is OSI Model | 7 Layers Explained \(geeksforgeeks.org\)](#)

[TCP/IP Model – GeeksforGeeks](#)

[IoT networking protocols: overview and advantages | Onomondo](#)

[IoT Network Protocols \(tutorialspoint.com\)](#)

- **Security Related**

[What is IoT Security? | TechTarget](#)

[What is IoT security? | IoT device security | Cloudflare](#)

[What is IoT Security? – GeeksforGeeks](#)

- **Accessing IPs and Protocols**

[HTTP, HTTPS, SSL, TLS](#)

[Device Discovery Protocols – DHCP](#)

[Device Discovery Protocols – mDNS](#)

[Device Discovery Protocols – ZeroConf](#)

[Remote Access Protocols – RDP](#)

[Remote Access Protocols – SSH](#)

PHASE 3 :

Microcontrollers

[An Introduction to Microcontrollers and GPIOs and MMIOs](#)

[Popular Microcontrollers](#)

[Communication Protocols – UART, SPI](#)

[Communication Protocols – I2C](#)

[How GPIO Works](#)

ESP32 and NodeMCU

[Meet IoT Boards: ESP32 and ESP8266](#)

[Intro to ESP32](#)

[Intro and Exercises on NodeMCU](#)

Arduino

[Intro to Arduino for Beginners](#)

[Demonstration of Multiple Projects involving Arduino](#)

[Arduino Nano Intro](#)

Raspberry Pi

[Intro to Raspberry Pi including Interfacing Sensors, Motors, GPS and Displays](#)

[Demonstration of Multiple Projects involving RPi](#)

[Creating a GUI using Tkinter and sensor data evaluation on RPi](#)

Seeed Studio

[Getting Started with Seeed Studio XIAO SAMD21](#)

[Reading External Sensor Data with the Seeed Studio ESP32C3 MCU](#)

Assignment

[Mini Tasks to Carry out on Arduino Uno using TinkerCad](#)

PHASE 4 :

Web Development and its basics

[So what is WebDev? | GeeksForGeeks :](#)

[HTML | GeeksForGeeks](#)

[CSS | GeeksForGeeks](#)

[JavaScript | GeeksForGeeks](#)

[ReactJS | GeeksForGeeks](#)

FINAL PROJECT

IOT Simulator and Projects

