# Node.js Training

Duration: **4 Day**

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## Overview

Node.js Certification Training helps you gain an in-depth knowledge of concepts such as Express.js, Node Package Manager (npm), Asynchronous Programming, REST API, Node.js with MongoDB, CRUD operations, Microservices Architecture and many more. After completing this training developers will be able to quickly establish their credibility and value in the job market.

Node.js uses JavaScript - a language known to millions of developers worldwide - thus giving it a much lower learning curve even for beginners. Using Node.js you can build simple command line programs or complex enterprise level web applications with equal ease. Node.js is an event-driven, server-side, asynchronous runtime environment. Node.js helps you to code the most complex functionalities in just few lines of code.

## Prerequisites

The pre-requisites for Node.js include good knowledge of JavaScript.

## Who Should Attend

This course is designed for professionals who aspire to be application developers and gain expertise in building real-time, highly-scalable applications using  Node.js. The following professionals can go for this course:

- Freshers who wish to learn web development
- Web Developers
- Project Managers
- Software Architects
- Testing Professionals

## Outline

### Introduction to Node.js

**Learning Objective:** In this module, you will learn what is Node.js and what makes Node.js so popular. You will also learn how to use Node Package Manager (NPM) and Nodemon.

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**Topics:**

- What is Node.js?
- Why Node.js?
- Installing NodeJS
- Node in-built packages (buffer, fs, http, os, path, util, url)
- Node.js Modules
- Import your own Package
- Node Package Manager (NPM)
- Local and Global Packages
- Push code to GitHub

**Hands On:**

- Installation of Node.js and Visual Studio Code
- Installation of GIT and push codes to GIT repository

## File System Module and Express.js

**Learning Objective:** In this module, you will learn how to get user inputs via Command Line Arguments and store data using File system. You will also learn how to create the applications using Express Framework, whereas manage and deploy them using PM2 and Nginx.

**Topics:**

- Get Input from Users
- Pass Multiple Arguments with Yargs
- File System Module
- Operations associated with File System Module
- JSON Data
- Http Server and Client
- Sending and receiving events with EventEmitters
- Express Framework
- Run a Web Server using Express Framework
- Routes
- Deploy application using PM2 and Nginx

**Hands On:**

- Build an API using express, read file with FS module, and deploy application using PM2 and Nginx

## Asynchronous Programming

**Learning Objective:** In this module, you will learn how to develop asynchronous Node.js applications using Call stack, Callback queue and Event Loop mechanism. You will also gain knowledge on how to work with HTTP request, Promises and EJS templates.
**Topics:**

- Call Stack

- Callbacks, Callback Queue and Event Loop
- Callback Abstraction
- Callback Chaining
- Promises
- Promise Chaining
- Request Package
- Customizing HTTP Requests
- Error handing with appropriate HTTP codes
- Introduction to template engine (EJS)

**Hands On:**

- Create A HTML Page Using EJS Template
- Create A Weather Application

## Integration with MongoDB and Email Servers

**Learning Objective:** In this module, you will learn how to work with NoSQL Database – MongoDB. Also, you will learn how to send emails via Node.js application.

**Topics:**

- Introduction to NoSQL Databases and MongoDB
- Installation of MongoDB on Windows
- Installation of Database GUI Viewer
- Inserting Documents
- Querying, Updating and Deleting Documents
- Connect MongoDB and Node.js Application
- Exploring SendGrid
- Sending emails through Node.js application using SendGrid

**Hands On:**

- Installation of MongoDB and MongoDB Compass
- Connecting MongoDB And Node.js
- Sending Email Via Node.js Application Using SendGrid

## REST APIs and GraphQL

**Learning Objective:** In this module, you will learn how to run queries via Node.js application along with some important aspects of Node.js like REST APIs, setting up Mongoose, Postman Installation and GraphQL.

**Topics:**

- REST API
- REST API in Express
- Postman
- MongoDB Driver API

- Express Router
- Mongoose API
- GraphQL
- GraphQL Playground

**Hands On:**

- Working Of mongodb API
- Working With Mongoose API
- Working With GraphQL API

## Building Node.js Applications using ES6

**Learning Objective:** In this module, you will learn how to write your application using ES6. Also, you will learn how to Design Dashboard and perform CRUD operations.

**Topics:**

- ES6 variables
- Functions with ES6
- Import and Export withES6
- Async/Await
- Introduction to Babel
- Rest API with ES6
- Browsing HTTP Requests with Fetch
- Processing Query String
- Creating API using ES6
- Transpilation
- Building Dashboard API
- Creating dashboard UI with EJS
- ES6 Aside: Default Function Parameters
- Data Validation and Sanitization

**Hands On:**

- Build a Dashboard Application Using ES6 concepts

## User Authentication and Application Security

**Learning Objective:** In this module, you will learn how to secure your application by implementing API Authentication and User authentication using JSON Web Tokens (JWT).

**Topics:**

- Authentication
- Types of Authentication
- Session Vs Tokens
- JSON Web Tokens
- Bcrypt

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- Node-localstorage

**Hands On:**

- Build a Login Application

## Dynamic Client-Server Interaction using Socket.IO

**Learning Objective:** In this module, you will learn how Build Realtime Chat Application using Socket.IO.

**Topics:**

- Web Sockets
- Web Sockets
- Socket.io
- Broadcasting Events
- Sharing Your Location
- Event Acknowledgements
- Form and Button States
- Rendering Messages
- Working with Time and Timestamps for determining Location of Messages
- Storing Users, Rendering User List, Tracking Users Joining and Leaving
- Deploying the Chat Application
- Redis - Building API with Redis

**Hands On:**

- Creating a Realtime Chat Application using Socket.io
- Build an API using Redis

## Testing Node.js Applications

**Learning Objective:** In this module, you will learn how to test your Node.js applications using Mocha and Chai, along with some important testing concepts related to Node.js Application.

**Topics:**

- Writing Tests and Assertions
- Testing Asynchronous Code
- Testing an Express Application
- Setup and Teardown
- Testing with Authentication
- Advanced Assertions
- Mocking Libraries
- Wrapping up User Tests
- Setup Task Test Suite
- Testing with Task Data

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**Hands On:**

- Perform Testing with Mocha and Chai

## Microservices Application

**Learning Objective:** In this module, you will learn how to build a Node.js application based on Microservices architecture and also how to deploy them to Docker containers.

**Topics:**

- Why Microservices?
- What is Microservices?
- Why Docker?
- What is Docker?
- Terminologies in Docker
- Child Processes
- Types of child process

**Hands On:**

- Microservices with Docker
- Working of Child Processes