

## Introduction to Node.js

- What is Node.js?
- Why Node.js?
- Node Modules
- Node Built-in packages.
- Creating your own package.
- Import your own Package.
- NPM (Node Package Manager)
- Local and Global Packages

### Hands-on:

- Install Node.js
- Run a simple Node.js Script
- Create a Node Module and use it in your code
- Search the NPM Repository to find a package and install it in your project

## Asynchronous Programming

- What is Asynchronous Programming in JavaScript?
- JavaScript EventLoop
- Callbacks
- Callback Hell
- Promises
- Promise Chaining
- Async Await

### Hands-on:

- Demonstrate the use of callbacks, promises, and async-await

## FileSystem

- Synchronous vs Asynchronous IO
- File Constants (`__dirname` and `__filename`)
- Synchronous File Operations
- Asynchronous File Operations
- FileSystem Watcher

### Hands-on:

- Write Node.js code to asynchronously perform file operations
- Write Node.js code to log to the console if a file changes in a directory

## Streams and Events

- What are Streams in Node.js
- Reading and Writing Streams
- Understanding and using EventEmitter class
- Emitting Events
- Responding to events

### Hands-on:

- Read data from a file using Input Stream and display on screen.

## HTTP

- What is HTTP
- How Does HTTP Work?
- Standard HTTP response codes
- Node HTTP Module
- Processing Form Data
- Processing Query Strings from URL
- Sending Back response

### Hands-on:

- Create a simple HTTP Server using Node

## ExpressJS

- What is ExpressJS?
- Installing ExpressJS
- Creating a simple HTTPServer using ExpressJS
- Routing in Express
- Templating in Express
- Templating using JADE
- Middlewares

### Hands-on:

- Create a simple ExpressJS Application with routes and templates

## ExpressJS and MongoDB

- What is MongoDB
- MongoDB Advantages
- Documents
- Collections
- Mongoose ODM
- Creating Schemas and Models using mongoose
- CRUD Operations in MongoDB using Mongoose and Express

### Hands-on:

- Create a simple TodoList Application using ExpressJS and Mongoose

## Testing

- What is Unit Testing?
- Why Unit Testing?
- Unit Testing Frameworks
- What are Mocks and Stubs?
- Writing and Running tests in Express

### Hands-on:

- Write and run some unit tests to test a module

## REST API using Express and Mongoose

- What is a REST API
- Why REST API?
- Data Exchange Formats
- JSON vs. XML
- Monolith Architecture
- Microservice Architecture

### Hands-on:

- Build a small application using the REST API