

# COURSE CONTENTS



## Course Agenda

Node JS

Duration – 2 Days

Adding   
Value

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## Description

Node.js is a JavaScript runtime built on Chrome's V8 JavaScript engine. As an asynchronous event driven JavaScript runtime, Node is designed to build scalable network applications. HTTP is a first class citizen in Node, designed with streaming and low latency in mind. This makes Node well suited for the foundation of a web library or framework. Express is a minimal and flexible Node.js web application framework that provides a robust set of features for web and mobile applications. Mocha is a feature-rich JavaScript test framework running on Node.js. Chai is an assertion library for node.

## Intended Audience

This course is intended for:

- Developers
- Tech Leads
- Architects

## Course Objectives

In this course, you will learn how to:

- Create basic web applications with Node.js
- Build an HTTP server using the core modules in Node.js
- Test the reliability of the application using Mocha and Chai
- Create web application using express framework
- Build REST API
- Interface to a MongoDB database and MySQL

## Prerequisites

We recommend that attendees of this course have the following prerequisites:

- Knowledge of HTML and JavaScript
- Basic Programming Knowledge

## Hands-On Activity

This course allows you to test new skills and apply knowledge to your working environment through a variety of practical exercises.



## Course Outline

This course covers the following concepts:

- Introduction
  - Synchronous Programming
  - Asynchronous Programming
  - Single Threaded vs. Multithreaded Applications
  - Understanding Callbacks
- ES6 Fundamentals
  - Default Parameters
  - Arrow Functions
  - Template Literals
  - Multiline String
  - Scoping using Let and Const Keywords
  - Spread Syntax and Rest Parameters
  - Destructuring
  - Promises, resolve(),reject()
  - Async / Await
  - Classes and Objects
- Node Basics
  - The Node.js framework
  - Why Node JS?
  - Advantages
  - Installing Node.js
  - Node.js REPL
  - Language Basics
  - Using Node.js to execute scripts
  - Parsing command line arguments (process.argv)
- Architecture
  - Chrome V8 Engine
  - Node.js Call Stack
  - Node.js Event Loop
  - Event Queue
- Node Projects
  - The Node Package Manager (NPM)
  - Creating a project
  - The package.json configuration file
  - Global vs. local package installation
- Node Modules
  - Built-in Modules
  - External Modules
  - Creating your own Modules
- Node Events



- Event Module
  - EventEmitter Object
- File System, Buffers and Streams
  - Synchronous vs. Asynchronous I/O
  - Path and directory operations
  - Asynchronous file reads and writes
  - Using buffers for binary data
  - Streaming I/O from files and other sources
  - Processing streams asynchronously
- Debugging Node.js
  - Enable Inspector
  - Chrome Dev Tools
  - Chrome://inspect
  - Break Points
- URL Module
  - Parse URL
- HTTP Module
  - The HTTP protocol
  - Building an HTTP server
    - Request
      - Read Query String
      - Split Query String
    - Response
  - Rendering a response
    - http header
  - Processing query strings
  - Using Representational State Transfer



- Express JS
  - Express Web Application Framework
  - Installation
  - Express Server
  - Routing
    - Routing Methods
    - get,post,put,delete
  - Route Parameters
    - req.params
    - req.body
  - Route Handlers
  - Response Methods
    - send(), json(),redirect(),sendFile()
  - Serving Static Content
    - express.static()
  - Modular Route Handlers
    - express.Router
  - Middleware
    - app.use()
    - Application level middleware
    - Router-level middleware
    - Error-handling middleware
    - Built-in middleware
    - Third-party middleware
    - Sessions
    - Cookies
  - Template Engine
    - ejs,handlebars
    - Configuring Express to use Handlebars
    - Handlebars Partial
    - Handlebar Helpers
- Data Sources
  - How Node.js connects to databases
  - RDBMS databases and NoSQL databases
  - Connecting to RDBMS and NoSQL databases
  - Performing CRUD operations



## Related Training

Recommended Related Training Courses:

- Angular
- React

## Lab Setup

- Microsoft Visual Code IDE
- Node.js
- Google Chrome Browser
- Desktop PC / Laptop with Windows O.S
- Internet connection
- MySQL
- MongoDB