**Node JS (3 days for lateral batch)**

Program Overview: In this program participants will learn about the fundamentals of NodeJS, building web applications using Express.js, fundamentals of MongoDB and writing unit tests and code coverage using Mocha, Chai, SuperTest & Istanbul.

Program Duration: 3 Days.

Prerequisite Skills: HTML, JavaScript & CSS.

Who should attend? It would be beneficial for the web application developers who want to build scalable, standards-based web applications using NodeJS, Express.js, MongoDB, Mocha, Chai, SuperTest & Istanbul.

Contents:

• Getting started with Node.js

o JavaScript Essentials

§ How JavaScript works

§ Event loop

§ Stack, Heap and Queue

o Node.js Fundamentals

§ Introduction to Node.js

§ Why Node.js?

§ Traditional Programming Limitations

§ Creating more call stacks

§ Event-Driven Programming

§ Node.js Official website

§ Downloading and Installing Node.js

§ Node.js Globals

o Working with Modules

§ Module Introduction

§ Modules in Node.js

§ package.json usage

§ Creating package.json

§ Node Package Manager

§ Loading a third party module (installed via NPM)

§ Creating and exporting a module

o Working with Buffers

§ Buffers in Node

§ Creating Buffers in Node

§ Writing to Buffer

§ Reading from Buffer

§ Slicing and copying a buffer

o Event Handling

§ Event Handling in Node

§ EventEmitter

§ EventEmitter Methods

§ Creating an EventEmitter

o Working with File System & Streams

§ FileSystem module

§ File I/O methods

§ Stream

§ Readable Stream

§ Writable Stream

• Working with Express framework

o Web development with Node

§ Introduction

§ HTTP module in Node.js

§ Creating HTTP Server

§ HTTP Properties and Methods

§ HTTP Events

§ Routing

o Templating Engines

§ Introduction

§ Jade Templating Engine

§ Working with Tags in Jade

§ Working with id and classes in Jade

§ Attributes and Nesting Tags in Jade

§ Using if & unless in Jade

§ Using for & each in Jade

§ Using case & mixins in Jade

§ Include and Extend in Jade

§ EJS Templating engine

o Working with Express.js

§ Introduction

§ Introduction to Express.js

§ Connect Module

§ Express.js Installation

§ app.js

§ Steps for creating Express.js Application

§ application, request, response object properties & methods

§ How Express.js works

§ Request flow in Express

§ Using middleware

§ Types of middleware

§ Application level middleware

§ Router level middleware

§ Built-in middleware

§ Third party middleware

§ Express 4.0 Router

§ Express.js Scaffolding

• Database and Session Handling

o MongoDB Basics

§ Introduction

§ Why MongoDB

§ MongoDB Key terminologies

§ SQL Terminology vs MongoDB Terminology

§ MongoDB vs Relational Databases

o Getting started with MongoDB

§ Starting the mongo shell

§ Creating and Dropping Database

§ Creating and Dropping Collection

§ Importing and Exporting Collection

o MongoDB Queries

§ Querying MongoDB Documents – find()

§ Querying MongoDB Documents – pretty()

§ Querying MongoDB Documents – findOne()

§ Comparison Operators – gte & lte

§ Comparison Operators – in & nin

§ Logical Operators – or, not & and

§ MongoDB Additional operators – all

§ MongoDB Additional operators – exists

§ MongoDB Additional operators –regex

§ MongoDB Additional operators –where

§ MongoDB Additional operators –sort

§ MongoDB Additional operators –limit & skip

§ Inserting Document(s)

§ ObjectId

§ Updating Document(s)

§ Updating Document - save

§ Updating Document – findAndModify

§ Auto-Incrementing Sequence Field

§ Array Update Operators

§ Array Update Operators – Adding array items

§ Array Update Operators – Removing array items

§ Renaming and Deleting fields and documents

§ Aggregation

§ Stored JavaScript

§ Indexing

o Mongoose Library

§ Introduction to Mongoose Library

§ Connecting MongoDB using Mongoose Library

§ Object Modeling

§ RDBMS Schema Vs Mongoose Schema

§ Simple Schema

§ Complex Schema

§ Validations in Model

§ Finding documents

§ Query API

o Session Handling

§ Introduction

§ Session Handling in Node.js

§ Storing session information in MongoDB

§ Introduction

§ Hashing data using bcryptjs

• Unit Testing, Logging & Debugging

o Unit Testing

§ Introduction

§ Test-Driven Development

§ Test-After Development

§ Behavior-Driven Development

o Unit Testing in Node

§ Unit Testing in Node

§ Mocha

§ Chai

§ SuperTest

§ Code coverage using Istanbul

o Logging and Debugging

§ Logging using morgan

§ Debugging with node-inspector

§ Steps to debug

On Completion of this program: The participants will be able to understand and create web applications using Express.js, MongoDB, Mocha, Chai, SuperTest & Mocha using Node.JS platform.