



# MEAN STACK

Programming & development

Course Curriculum

Basic – 240 Hours



# MEAN STACK (MongoDB, Express.js, Angular, and Node.js)

## **Module 1 : Introduction to Web Development**

- HTML Basic
- HTML Elements
- HTML Attributes
- HTML Styles
- HTML Forms
- HTML Form Elements
- HTML Input Element Types
- HTML Input Attributes
- HTML File Paths Script tag and its uses

## **Module 2 : Introduction to CSS**

- HTML & XHTML CSS
- Introduction CSS Syntax CSS Selectors CSS Styling



## **Module 3 : Java Script**

- Introduction to JavaScript
- JavaScript Statements
- JavaScript Keywords
- JavaScript Functions
- JavaScript Programs
- JavaScript Operators
- Function Parameters
- Function Return Values
- JavaScript Data Types
- Primitive Types



## **Module 4 : Java Script & Objects**

- Object Overview
- Object Oriented Programming
- Object creation
- Adding Properties to Objects
- Adding Methods to Objects
- JavaScript Conditional Statements
- JavaScript Loops & Iteration
- Enumerating properties
- Call-backs
- JSON

## **Module 5 : Introduction to MEAN Stack**

- Overview of MongoDB, Express.js, Angular, and Node.js

## **Module 6 : Introduction to MongoDB**

- Introduction to Mongo DB
- Why use MongoDB?
- Installation of MongoDB

## **Module 7 : Aggregation in MongoDB**

- Introduction to Aggregation
- Syntax
- Parameters Count, Sum, Average, Match and Operations with arrays

## **Module 8 : Introduction to Express.js**

- Introduction to Express.js
- What is Express.js?
- How Express.js Works
- Installation



## **Module 9 : MVC Structure**

- The model-view-controller pattern
- Configuring Express
- Postman configuration
- Hello world example

## **Module 10 : Angular JS Basics**

- Introduction to AngularJS
- MVC Architecture
- Conceptual Overview
- Setting up the Environment
- First Application
- Understanding ng attributes

## **Module 11 : Angular Expressions**

- All about Angular expressions
- How to use expressions
- Angular expressions v/s JavaScript expressions
- Number and String Expressions
- Object Binding and Expressions
- Working with Arrays
- Forgiving Behaviour
- Understanding Data binding

## **Module 12 : Node JS Basics**

- Introduction to Node.JS
- What is Node JS?
- Advantages of Node JS
- Traditional Web Server Model
- Node.js Process Model



## **Module 13: Environment setup for Node.js**

- Install Node.js on Windows
- Installing in mac os
- Working in REPL
- Node JS Console

## **Module 14: Backing up and Restoring Data in MongoDB**

- Mongoimport with JSON
- Mongoimport with CSV

## **Module 15: Bulk Operations**

- Converting a field to another type
- Updating the entire collection in Bulk.

## **Module 16: Collections in MongoDB**

- Create a Collection
- Drop Collection
- Starting mongo with a specific config file

## **Module 17: Request parameters in Express JS**

Request object holds all the HTTP request information

- .app
- .BaseUrl
- .body
- .cookies
- .hostname
- .ip
- .method
- .params
- .path
- .protocol



- .query
- .secure
- .signedCookies
- .xhr

## **Module 18: JSON Data in Express**

- HTTP methods
- JSON DATA and Routers
- CRUD Operations
- Adding middleware

## **Module 19: Filters in Angular**

- Built-In Filters
- Uppercase and Lowercase Filters
- Currency and Number Formatting Filters
- Order By Filter
- Creating Custom Filter



## **Module 20: Directives in Angular**

- Introduction to Directives
- Directive lifecycle
- Using AngularJS built-in directives
- Binding controls to data
- Matching directives
- Creating a custom directive
- Conditional Directives
- Styles Directives
- Mouse and Keyboard Events Directives

## **Module 21: Node JS Modules**

- Functions
- Buffer
- Module



- Module Types
- Core Modules
- Local Modules
- Module Exports

## **Module 22: Node Package Manager**

- What is NPM
- Installing Packages Locally
- Adding dependency in package.json
- Installing packages globally
- Updating packages

## **Module 23: CRUD Database Operations in MongoDB**

- Basic Syntax
- Create, Read, Update and Delete Databases
- More Update operators
- List all databases
- List all collections in database



## **Module 24: Indexes in MongoDB**

- Basic Indexes Syntax
- Single field
- Compound
- List
- Index Creation Basics

## **Module 25: Mongo as Shards**

- Sharding Environment Setup
- Config Server
- Replica Sets
- Mongos

## **Module 26: MongoDB – Configure**

- Introduction
- Create the Root Certificate
- Generate the Certificate Requests and the Private Keys
- Sign your Certificate Requests
- Concat each Node Certificate with its key
- Deploy your ReplicaSet
- Deploy your ReplicaSet for Mutual SSL / Mutual Trust
- No Mutual SSL
- With Mutual SSL

## **Module 27: Express JS with MongoDB**

- Connecting to RDBMS and MongoDB databases
- Performing CRUD operations

## **Module 28: Full Stack Application**

- Building a full – stack application with Node.js, Express.js and Angular
- Exploring the Front-end
- Creating the front-end UI

## **Module 29: Angular Controllers**

- Understanding Controllers
- Programming Controllers & \$scope object
- Adding Behaviour to a Scope Object
- Passing Parameters to the Methods
- Having Array as members in Controller Scope.
- Nested Controllers and Scope Inheritance.
- Multiple Controllers and their scopes

## **Module 30: Angular JS Forms**

- Using Simple Form
- Working with Select and Options





- Input Validations
- Using CSS classes
- Form Events
- Custom Model update triggers
- Custom Validations

### **Module 31: Angular JS Modules**

- Why Module?
- Module Loading and Dependencies
- Recommended Setup of Application
- Creation vs Retrieval.

### **Module 32: Angular JS Scope**

- What is scope
- Scope lifecycle
- Two way data binding
- Scope inheritance
- Scope & controllers
- Scope & directives
- \$apply and \$watch
- Rootscope
- Scope broadcasting
- Scope events



### **Module 33: Webserver Creation using Node.js**

- Creating web server
- Handling http requests
- Sending requests

### **Module 34: Debugging Node JS Application**

- Core Node JS debugger
- Debugging with Visual Studio



## **Module 35: Database Connectivity using Node.js**

- Connection string
- Configuring
- Working with select command
- Updating records
- Deleting records

## **Module 36: MongoDB Aggregation(Advanced)**

- Aggregate query
- Match , Project, Group , Sum, Average, Minimum and Maximum
- Minimum with Maximum
- Push and addToSet
- Boolean Aggregation operator in projection
- Boolean Aggregation operator in match
- Left Outer Join with Aggregation (\$Lookup)

## **Module 37: MongoDB Authorization Model and Pluggable Storage Engines**

- Introduction to Authorization Model
- Build-in Roles and Database User Roles
- MMAP, WiredTiger, In-memory, Mongo-rocks, Fusion-io, and TokumX

## **Module 38: Express JS -Serving static files**

- Multiple Static Directories
- Virtual path prefix
- Setting up Mongoose and Models

## **Module 39: Learning Express Routes**

- starting a server
- Writing your first route
- Sending a response
- Matching route paths
- Getting a single expression



- Setting status codes
- Matching longer paths
- Other HTTP methods

## **Module 40: Angular JS Dependency Injection & Services**

- What is Dependency Injection
- Using Dependency Injection
- What are services
- Creating services Factory, Service & Provider
- Using AngularJS built in services

## **Module 41: Angular JS AND Ajax**

- \$http Service
- \$q Service
- Ajax Impl using \$http and \$q Service



## **Module 42: Node JS Template Engine**

- Why Template Engine
- What is Jade
- What is vash
- Example

## **Module 43: Serving Static Resources in Express JS**

- Serving static files
- Working with middle ware

## **Module 44: MongoDB Python and Python Driver**

- Syntax and parameters
- Connect to MongoDB using pymongo
- PyMongo queries
- Update all documents in a collection using PyMongo

## **Module 45: Querying for Data and Projection in MongoDB**

- Find(), findOne(), and Query Document – Using AND, OR AND IN Conditions
- Find() method
- Limit, skip, sort and count the results of the find() method

## **Module 46: Replication and Update Operators in MongoDB**

- Basic configuration with three nodes
- Creating data folders
- Starting mongod instances
- Configuring replica set
- Syntax parameters and Examples

## **Module 47: Express.js**

- Building RESTful APIs with advanced features
- Cookies, Sessions, Scaffolding and Error Handling
- Debugging



## **Module 48: Angular JS Routing & Single Page Application(SPA)**

- What is SPA
- Pros & Cons of SPA
- Installing the ngRoute module
- Configure routes
- Passing parameters
- Changing location
- Resolving promises
- Create a Single Page Application

## **Module 49: Angular JS Animations**

- ngAnimate Module
- CSS transforms
- CSS transitions
- Applying animations



- Directives supporting animation

