



Deccan Education Society's

FERGUSSON COLLEGE (AUTONOMOUS), PUNE

under: Savitribai Phule Pune University,

Re-Accreditation by: NAAC "A" Grade with CGPA 3.62

Awarded: College of Excellence by (UGC), DBT STAR College, DST-FIST supported departments

Certificate Course in "MEAN Stack Web Development"

MEAN Stack Overview:

MEAN is an acronym for MongoDB, ExpressJS, Angular and Node.js.

MEAN Stack web development is a structured learning path recommended by leading industry experts and ensures your mastery of full MEAN stack development.



Collection of JavaScript based technologies used to develop web applications.

MongoDB is a schemaless NoSQL database system. MongoDB saves data in binary JSON format which makes it easier to pass data between client and server.

ExpressJS is a lightweight framework used to build web applications in Node. It provides a number of robust features for building single and multi page web application. ExpressJS is inspired by the popular Ruby framework, Sinatra.

Angular is a TypeScript based open-source front-end web application platform led by the Angular Team at Google. It gives an extraordinarily expressive, readable and fast way to develop rich front ends for websites.

Node.js is a server side JavaScript execution environment. It is a platform built on Google Chrome's V8 JavaScript runtime. It helps in building highly scalable and concurrent applications rapidly.

Course Objective:

The overall aim of the course is to enable participants to confidently build different types of application using the MEAN stack.

The course is divided into four modules, **MongoDB, ExpressJS, Angular, and Node.js**.

Each module focuses on a different goal. The four modules work together building a full application, with an overall outcome of showing how to **architect and build complete MEAN applications**.

Course Details:

Title	Certificate Course in MEAN Stack Web Development
No. of Credits	5 (Total No. of Clock Hours = 75)
Duration	13 Weeks
Actual Contact Hours Classroom Training (with hands-on)	60
Project Based Learning Hours	15
Fee Structure	15000.00 / Participant
Eligibility	Open for all Students / Individuals/ Professionals with basic knowledge of HTML5, CSS3 and JavaScript
Intake	30 Participants

Outcome:

By the end of the course, participants will be able:

- To set up a web-server using Node.js and ExpressJS, to listen for request and return response.
- To design **NoSQL** databases and work with MongoDB from the command line and from Node.js and ExpressJS.
- To design and build robust **REST APIs** using Node.js, ExpressJS and MongoDB, following industry best practices.
- To build high quality Angular **single page applications** (SPAs), following industry best practices.
- To build full stack applications in JavaScript using the MEAN technologies.

Syllabi:

Introduction to MEAN

- ❖ Defining MEAN
- ❖ Studying the Architecture of MEAN
- ❖ Scope of MEAN
- ❖ Benefits of Using MEAN
- ❖ Application of MEAN
- ❖ The Four Building Components
- ❖ An Insight into Mongo DB
- ❖ An Insight into Express
- ❖ An Insight into Angular.js
- ❖ An Insight into Node.js
- ❖ Collaboration of the Four technologies
- ❖ Outcome and Deployment

MongoDB

- ❖ What is MongoDB
- ❖ MongoDB History
- ❖ MongoDB Features
- ❖ No SQL Databases
- ❖ Advantages over RDBMS
- ❖ MongoDB Data Types
- ❖ Install MongoDB
- ❖ MongoDB Shell
- ❖ MongoDB Data Modeling
- ❖ **Database Operations**
- ❖ Create Database
- ❖ Drop Database
- ❖ **Collection**
- ❖ Create Collection
- ❖ Drop Collection
- ❖ **CRUD: Documents**
- ❖ Insert Documents
- ❖ Update Documents
- ❖ Delete Documents
- ❖ Query Documents
- ❖ **Connectivity**
- ❖ Java MongoDB
- ❖ Python MongoDB
- ❖ Node.js MongoDB
- ❖ **Technical Assessment**

Angular

- ❖ What is Angular
- ❖ MVC
- ❖ Introduction to TypeScript
- ❖ First App
- ❖ Data Binding
- ❖ Expressions
- ❖ Directives
- ❖ Components
- ❖ Modules
- ❖ Dependency Injection
- ❖ HTML Templating
- ❖ Filters
- ❖ Tables
- ❖ HTML DOM
- ❖ Forms
- ❖ Services
- ❖ Validation
- ❖ AJAX
- ❖ **Technical Assessment**

ExpressJS	Node.js
<ul style="list-style-type: none"> ❖ Introduction ❖ Environment Setup ❖ Basic Program ❖ Routing ❖ URL Binding ❖ Middleware ❖ Templating ❖ Static Files ❖ Post Data ❖ Database ❖ Cookies ❖ Sessions ❖ Scaffolding ❖ Error Handling ❖ RESTful API ❖ Debugging ❖ Technical Assessment 	<ul style="list-style-type: none"> ❖ What is Node.js ❖ Environment Setup ❖ First Application ❖ REPL Terminal ❖ Package Manager (NPM) ❖ Callbacks Concept ❖ Event Loop ❖ Event Emitter ❖ Buffers ❖ Streams ❖ File System ❖ Global Objects ❖ Utility Modules ❖ Web Module ❖ Express Framework ❖ RESTful API ❖ Scaling Application ❖ Packaging ❖ Unit-testing framework for Angular and Node.js ❖ Technical Assessment

Technical Assessment Details:

After each module a technical assessment would be conducted as follows:

Module	Assessment Type	Duration	Marks
MongoDB	Objective	45 Minutes	40
Angular	Objective	45 Minutes	40
Node.js	Objective	45 Minutes	40
Express	Objective	45 Minutes	40

Final Project:

To develop a **MEAN stack & RESTful API** based Web Application for “**Shopping Cart**”.

Description	Assessment Type	Duration	Marks
Project	Practical Implementation	Full Day	60

Note:

1. Grades would be given based on **Average Marks of Technical Assessments + Project Marks.**

Marks	Grade	Grade Point
90 – 100	O: Outstanding	10
80-89	A+ : Excellent	9
70-79	A: Very Good	8
65-69	B+ : Good	7
60 - 64	B: Above Average	6
55-59	C+ : Average	5
50 -54	C: Below Average	4
45-49	D : Satisfactory	3
40-44	E:Pass	2
0 -39	F : Fail	0
	Absent	0

2. **Certificate** would be issued to participants after successful course completion.