

DTD-PSD-106

Diploma in MERN

Program Information

Beginners : LEVEL I



Nature of the Course
Theory + Practical



Total Hours per Day
2 hours



Course Duration
2.5 Months + 1.5 Months
(Internship)

Course Summary

The Diploma in MERN (MongoDB, Express.js, React.js, and Node.js) is a comprehensive curriculum that covers both front-end and back-end development, providing students with a strong foundation in JavaScript and related technologies. The program is designed to equip students with practical skills that are in high demand by employers in the software development industry. Throughout the program, students will have the opportunity to work on real-world projects and develop hands-on experience in using the MERN stack to build web applications.

Completion Criteria

After fulfilling all of the following criteria, the student will be deemed to have finished the Module:

- Has attended 90% of all classes held
- Has received an average grade of 80% on all assignments
- Has received an average of 60% in assessments
- The tutor believes the student has grasped all of the concepts and is ready to go on to the second module.

Required Textbooks

- "Learning MERN Stack", Harmeet Singh, Paperback, 1st Edition.
- "MERN Essentials: Build universal apps with React" by Sasan Seydnejad, Paperback, 1st Edition

Prerequisites

- Basic knowledge about programming, bits/bytes, procedures, classes, computer architecture, etc. If you just have theoretical knowledge that is perfectly okay but you should have strong convictions on what programming is, and what you hope to achieve from this class.
- Willing and eager to spend at least 10-20 hours (varying from student-to-student) per week outside of the training class to read/write codes in JavaScript (self-study and practice).
- There is no prior educational level requirement for this course. Anyone from 10+2 students to someone who is doing their PHD are welcome to take this course.
- If you are only interested in theory and have no interest/patience in spending at least 10 hours every week throughout the duration of the course, then this course might not be for you.
- If you have absolutely no idea about programming or do not see yourself doing programming in the next six - odd months, then this class may not be for you.

Course Details



Week 1

- Mern Stack Development Introduction
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Week 2

- Environment Setup
 - IDE
 - Command Line
 - Git/GitHub Workflow
 - Postman
 - Yarn/NPM
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Week 3

- Mern Stack Development Introduction
 - Javascript – Basics
 - Data Types
 - Variables and Constant
 - Operators
 - Conditionals, Loop
 - Functions and Closure
 - Array and Objects
 - Inbuilt Methods
 - Prototypes (Prototype Based Inheritance)
 - ES5 and ES6 Standards
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Week 4

- NodeJS
 - Introduction to NodeJS
 - Node Package Manager (NPM)
 - Node Modules
 - Node CLI
 - Global Object
 - Creating HTTP Server with NodeJS
 - Working on Core Node API
 - Asynchronous and Event Loop in NodeJS
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Week 5

- NodeJS Framework – ExpressJS
 - Introduction to Frameworks and Express
 - The Model-View-Controller Pattern in ExpressJS
 - Middlewares
 - Templating Engines (PUG, Handlebars)
 - Routing
 - HTTP Protocol
 - HTTP Request Object
 - HTTP Response Object
 - User Authentication using JWT (JSON Web Token)
 - Garbage Collection and Error Handling
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Week 6-7

- MongoDB
 - Introduction to Database and Existing Database.
 - Understanding NoSQL (Schema Less Database).
 - Introduction to MongoDB (Collection and Documents)
 - CRUD Operations using Shell Commands.
 - Using MongoDB Native Driver with Node.
 - Database Modeling using ODM.
 - Using RoboMongo (UI Based Database System)
 - Update, Insert, Delete and Upsert Documents.
 - Aggregation in MongoDB
 - Map Reduce
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Week 8

- REST API
 - Introduction to API
 - Introduction to REST Architecture
 - Building APIs with ExpressJS
 - Using MongoDB as Data Store in
 - Express App with Mongoose
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Week 9-10

- React – Frontend Technology
 - Hypertext Markup Language (HTML)
 - Cascading Style Sheets (CSS)
 - Introduction to CSS Frameworks (Bootstrap)
 - Create-React-App and Project Setup
 - Component Patterns in React
 - State
 - Props
 - Life Cycle of React Components
 - Functional Component
 - Introduction to Hooks
 - React Router
 - SPA using React Router
 - Introduction to Redux and Flux Architecture
 - State Management
 - Reducers
 - Action Creators
 - Middlewares (Thunk, Saga)
 - Services
 - Error Handling
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Week 11

- Projects
 - Inventory
 - Management Login
 - System
 - Ecommerce App and other Mini-Projects
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Labs

Lab assignments will focus on the practice and mastery of contents covered in the lectures, and introduce critical and fundamental problem solving techniques to the students.

Learning Outcomes

- Understand how to build complex UIs using Spring Boot.
- Learn how to build a simple MVC application using Spring Boot.
- Learn to build RESTful web applications using Spring.

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