

Full Stack Developer (MERN) Advanced Syllabus

Double click or double tap to edit



Course Overview

This advanced syllabus is designed for aspiring full-stack developers with a focus on the MERN stack (MongoDB, Express.js, React.js, Node.js). This course aims to provide a deep understanding of modern web development practices, tools, and technologies, enabling students to build robust and scalable web applications.

Tools & Technologies

- Languages:** JavaScript (ES6+), HTML5, CSS3
- Frameworks/Libraries:** React.js, Express.js, Node.js
- Databases:** MongoDB, Mongoose
- Tools:** Git, npm/yarn, Webpack, Babel, VSCode, Chrome DevTools, Postman
- Platforms:** Heroku, Netlify, AWS (optional)
- Other:** REST APIs, GraphQL (optional), Authentication (JWT), Testing (Jest, Mocha)

Weekly Breakdown

The course is structured into weekly modules, each focusing on specific aspects of MERN stack development.

Week 1: Introduction to MERN Stack & ES6+ Review	Setting up the development environment, reviewing ES6+ features (arrow functions, destructuring, promises, async/await), and an overview of the MERN stack architecture.
Week 2: Node.js & Express.js Fundamentals	Introduction to Node.js, building RESTful APIs with Express.js, middleware, routing, and handling HTTP requests. Implementing basic CRUD operations.
Week 3: MongoDB & Mongoose	Introduction to MongoDB, schema design, data modeling with Mongoose, connecting Node.js/Express.js to MongoDB, and performing database operations.

Week 4: React.js Fundamentals	Introduction to React.js, components, JSX, state management (useState), handling events, and rendering lists. Building basic UI elements.
Week 5: Advanced React.js	React hooks (useEffect, useContext, useReducer), custom hooks, form handling, and conditional rendering. Introduction to React Router.
Week 6: Connecting React to the Backend	Making API calls from React using or Axios, handling asynchronous data, displaying data from the backend, and implementing user interactions.
Week 7: Authentication & Authorization	Implementing user authentication with JWT (JSON Web Tokens), securing API endpoints, and role-based authorization.
Week 8: Testing & Deployment	Writing unit tests and integration tests with Jest and Mocha. Deploying the MERN application to platforms like Heroku or Netlify.

Project Ideas

- **E-commerce Platform:** A simplified online store with product listings, shopping cart, and checkout functionality.
- **Social Media App:** A basic social networking platform with user profiles, posts, and comments.
- **Task Management App:** A tool for managing tasks, projects, and deadlines.
- **Blog Platform:** A platform for creating and managing blog posts with categories and comments.
- **Real-Time Chat Application:** A simple chat application using WebSockets for real-time communication.

Assessment

Students will be evaluated based on a combination of assignments, quizzes, and a final project. The final project will require students to build a complete MERN stack application that demonstrates their understanding of the course material.

Next Steps

Upon completion of this syllabus, students will be well-equipped to pursue full-stack developer roles, contribute to real-world web development projects, and continue their learning journey in the ever-evolving field of web technologies.