

Web Development Using MERN Stack with AI Integration | Duration: 1 Month

Week 1: Foundations of MERN Stack Development

- Introduction to MERN Stack (MongoDB, Express.js, React.js, Node.js)
- Setting up the development environment: Node.js, npm, VS Code, Git, MongoDB Atlas
- Understanding the project structure and architecture
- React.js Basics:
 - Creating a React project
 - Components, props, and state
 - Handling events and forms in React

Week 2: Backend Development with Node.js and Express.js

- Introduction to Node.js and its architecture
- Setting up a basic server with Express.js
- Handling routes, middleware, and APIs
- Connecting to MongoDB and performing basic CRUD operations
- Error handling and logging

Week 3: AI Integration and Frontend-Backend Connectivity

- Understanding AI in web applications and exploring AI APIs (e.g., OpenAI, Google AI)
- Integrating AI APIs with the backend using Axios/Fetch
- Building AI-powered features:
 - Chatbots for instant user support
 - Recommendation Systems for personalized content
 - Sentiment Analysis for user feedback
- Connecting frontend to backend with Axios/Fetch requests
- Managing state with Redux for AI-driven features

Week 4: Project Development and Deployment

- Planning and developing a full-stack AI-integrated project
- Implementing AI-powered features into the workflow
- Testing and debugging the entire application
- Deploying the app using Heroku/Vercel/Netlify
- Presenting the project and preparing for job interviews

Key Takeaways:

- Build and deploy full-stack web applications using the MERN stack
- Integrate AI-powered functionalities into your web applications
- Gain hands-on experience with real-world projects to showcase in your portfolio
- Master the art of combining modern development practices with AI

By the end of this course, you'll have a fully functional AI-driven web application built with the MERN stack, ready to be deployed and showcased. Let's build the future together!

Web Development Using MERN Stack with AI Integration | Duration: 2 Months

Week 1: Introduction to MERN Stack and Environment Setup

- Understanding the MERN Stack architecture: MongoDB, Express.js, React.js, Node.js
- Setting up the development environment:
- Installing Node.js, npm, and VS Code
- Setting up MongoDB Atlas for cloud database management
- Initializing the project with npm and managing dependencies
- Introduction to Version Control (Git/GitHub)

Week 2: Frontend Development with React.js (Part 1)

- Creating a new React.js project with Vite
- Understanding component-based architecture:
- Functional components, props, and state
- Event handling and form management
- Conditional rendering and lists
- Integrating React Router for navigation

Week 3: Frontend Development with React.js (Part 2)

- Managing state with Redux and the Context API
- Working with APIs using Axios/Fetch
- Integrating frontend with backend using RESTful APIs
- Building reusable UI components and ensuring responsiveness with CSS/Bootstrap/Tailwind CSS

Week 4: Backend Development with Node.js and Express.js (Part 1)

- Introduction to Node.js and asynchronous programming
- Building a server with Express.js
- Creating RESTful APIs and handling routes
- Connecting to MongoDB and performing basic CRUD operations
- Middleware and error handling

Week 5: Backend Development with Node.js and Express.js (Part 2)

- Implementing JWT-based authentication (login, signup)
- Securing routes with authentication and authorization
- Handling file uploads and implementing input validation
- Integrating external APIs for enhanced functionalities

Week 6: AI Integration

- Understanding AI use cases in web development
- Exploring AI APIs (e.g., OpenAI, Google AI) and setting up API keys
- Integrating AI-powered features into the project:
 - Chatbots for customer support
 - Recommendation engines for personalized content
 - Sentiment analysis for user feedback
- Frontend-Backend communication for AI-driven features

Week 7: Project Development

- Planning and building a full-stack project with AI integration
- Implementing frontend, backend, and database connectivity
- Incorporating AI-driven functionalities into the workflow
- Testing and debugging the application

Week 8: Deployment and Final Presentation

- Preparing the project for deployment
- Deploying the backend with Heroku/Render and the frontend with Netlify/Vercel
- Connecting the frontend and backend post-deployment
- Presenting the final project, creating a portfolio, and preparing for job interviews

Key Takeaways:

- Build and deploy full-stack web applications using the MERN stack
- Integrate AI-powered functionalities into web apps
- Develop real-world projects for your portfolio
- Master the skills required for a career in AI-driven web development

By the end of this course, you'll have a fully functional AI-powered web app built with the MERN stack — ready to deploy and impress!

Web Development Using MERN Stack with AI Integration | Duration: 3 Months

Week 1: Introduction to MERN Stack and Environment Setup

- Understanding the MERN Stack Architecture:
MongoDB, Express.js, React.js, Node.js
- Setting up the development environment:
- Installing Node.js, npm, and VS Code
- Creating a GitHub repository for version control
- Setting up MongoDB Atlas for cloud-based database management
- Introduction to project structure and package management

Week 2: Mastering React.js – Basics

- Introduction to React.js: Component-based architecture
- Building functional components, managing state, and handling props
- Event handling and conditional rendering
- Working with forms and controlled components

Week 3: React.js – Intermediate Concepts

- Implementing React Router for page navigation
- Handling API requests with Axios/Fetch
- Managing side effects with useEffect
- Introduction to global state management with Context API

Week 4: Advanced React.js

- Introduction to Redux for state management
- Building reusable components
- Integrating frontend with backend APIs
- Creating a responsive UI with Bootstrap/Tailwind CSS

Month 2: Backend Development with Node.js and Express.js

Week 5: Introduction to Backend Development

- Understanding Node.js and its asynchronous nature
- Building a server with Express.js
- Creating routes and handling requests/responses
- Introduction to RESTful APIs and connecting the frontend with backend

Week 6: Database Management with MongoDB

- Introduction to MongoDB and setting up the database
- Designing schemas and models with Mongoose
- Performing CRUD operations (Create, Read, Update, Delete)
- Handling errors and managing data relationships

Week 7: Authentication and Security

- Implementing JWT-based Authentication (Login/Signup)
- Securing routes with authentication and authorization
- Managing sessions and cookies
- Implementing password hashing with bcrypt

Week 8: Advanced Backend Concepts

- Integrating third-party APIs (e.g., payment gateways, email services)
- Error handling and logging
- Optimizing code structure and implementing best practices
- Deployment of the backend with Heroku/Render

Month 3: AI Integration and Project Development

Week 9: Introduction to AI in Web Development

- Understanding AI's role in web applications
- Exploring AI APIs (e.g., OpenAI, Google AI)
- Setting up API keys and making requests with Node.js

Week 10: Integrating AI Features

- Implementing AI-powered Chatbots for customer support
- Building Recommendation Engines for personalized content
- Performing Sentiment Analysis for user feedback
- Automating data analysis to generate insights

Week 11: Project Development

- Planning and designing the project architecture
- Implementing frontend, backend, and database connectivity
- Integrating AI-powered features into the workflow
- Testing and debugging the project

Week 12: Deployment and Final Presentation

- Deploying the full-stack project:
- Frontend with Netlify/Vercel
- Backend with Heroku/Render
- Connecting frontend and backend post-deployment
- Final project presentation and feedback
- Portfolio building and interview preparation

Key Takeaways:

- Master end-to-end web development using the MERN stack
- Integrate cutting-edge AI functionalities into real-world applications
- Build, deploy, and showcase projects in your professional portfolio
- Prepare for industry roles in full-stack and AI-driven development

By the end of this course, you'll have a fully functional AI-powered web app built with the MERN stack — ready to deploy and impress!

Enroll Now & Master Web Development Using MERN Stack with AI Integration At TP Digital Technologies!