

MERN STACK DEVELOPER PROGRAM SYLLABUS

Module 1: Web & JavaScript Foundations

- Web application architecture
- HTML5
- CSS3
- JavaScript fundamentals
- Variables
- Functions
- Arrays
- Objects
- DOM
- Events

Module 2: Modern JavaScript

- ES6+
- Destructuring
- Spread/rest
- Modules
- Array methods
- Promises
- Async/await
- Error handling
- Fetch API

Module 3: React Fundamentals

- React concepts
- Components
- JSX
- Props
- State

- Events
- Forms
- Conditional rendering
- Lists
- Application structure

Module 4: Advanced React

- Hooks
- useState
- useEffect
- Context API
- React Router
- Custom hooks
- API integration
- State management concepts

Module 5: Node.js

- Node.js architecture
- npm
- Modules
- File system
- Environment variables
- HTTP server
- Asynchronous programming
- Node project structure

Module 6: Express.js

- Express fundamentals
- Routes
- Middleware
- Controllers
- Request/response
- Error handling
- REST API development

- API architecture

Module 7: MongoDB

- NoSQL concepts
- MongoDB
- Collections
- Documents
- CRUD
- Queries
- Indexes
- MongoDB relationships
- Mongoose

Module 8: Full Stack API Development

- REST APIs
- React API integration
- CRUD operations
- Data validation
- Error handling
- Search
- Filtering
- Pagination

Module 9: Authentication & Security

- Registration
- Login
- Password handling
- JWT authentication
- Protected routes
- Roles and permissions
- Security fundamentals

Module 10: Real-World MERN Application

- Project planning
- Database architecture
- Backend architecture
- React dashboard
- User management
- File uploads
- Search and filtering
- Reports

Module 11: Git, Testing & Deployment

- Git
- GitHub
- Debugging
- API testing
- Environment variables
- Production configuration
- Deployment concepts

Module 12: Final Project & Career

- Complete MERN application
- Project documentation
- GitHub portfolio
- Resume preparation
- Interview preparation
- Freelancing
- Client project workflow
- MERN career roadmap