15 Days (Introduction to MERN Stack)

Objective:

- Familiarize participants with the MERN stack and basic web development concepts.

Syllabus:

1. **Day 1-2:** Introduction
   a. Overview of MERN stack and career opportunities.
   b. Setting up development environments (VS Code, Node.js, MongoDB).
2. **Day 3-5:** HTML, CSS, JavaScript Basics
   a. HTML5 structure and elements.
   b. CSS3 styling basics, responsive design.
   c. JavaScript fundamentals (variables, loops, DOM).
3. **Day 6-8:** Git and GitHub
   a. Version control basics.
   b. Creating repositories, pushing changes, and collaboration.
4. **Day 9-12:** Introduction to Node.js
   a. Basics of Node.js.
   b. Package management with npm.
5. **Day 13-15:** Introduction to MongoDB
   a. NoSQL vs. SQL databases.
   b. Basics of MongoDB, CRUD operations.

30 Days (Beginner-Level MERN Development)

Objective:

- Build foundational knowledge of the MERN stack.

Syllabus:

1. **Week 1-2:** Frontend Development
   a. Deep dive into HTML, CSS, and JavaScript.
   b. Bootstrap and responsive design.
2. **Week 3:** React Basics
   a. Introduction to React.js and JSX.
   b. Functional components, state, and props.
3. **Week 4:** Backend Basics

     a. RESTful APIs with Express.js and Node.js.
     b. Basic routing and middleware.

45 Days (Intermediate-Level MERN Development)

Objective:

- Develop interactive full-stack applications.

Syllabus:

1. **Week 1-2:** Advanced React.js
   a. React Hooks and Context API.
   b. Component lifecycle methods.
2. **Week 3:** Advanced Node.js and Express.js
   a. Middleware, authentication, and authorization (JWT).
   b. API development and error handling.
3. **Week 4:** MongoDB
   a. Aggregations, indexing, and relationships.
   b. Connecting MongoDB to Node.js.
4. **Week 5:** Full-Stack Basics
   a. Create a simple MERN application (Frontend + Backend).
   b. Deployment basics (Netlify, Heroku).

60 Days (Advanced MERN Development)

Objective:

- Build complex, real-world applications.

Syllabus:

1. **Week 1-2:** Advanced Frontend
   a. State management with Redux.
   b. Advanced CSS frameworks (Material-UI, Tailwind CSS).
2. **Week 3-4:** Backend Development
   a. Role-based authentication and session handling.
   b. Advanced API concepts: pagination, filtering.
3. **Week 5:** Full-Stack Integration
   a. Building dynamic and secure APIs.
   b. Integrating frontend with backend.

4. **Week 6:** Real-World Project
    a. Develop a small MERN project (e.g., Task Manager).

90 Days (Comprehensive MERN Development)

Objective:

- Master MERN stack with advanced features and deployment.

Syllabus:

1. **Week 1-4:** Advanced Frontend & Backend
    a. Advanced React patterns (React Query, Code Splitting).
    b. Building scalable APIs with Node.js.
2. **Week 5-6:** Database Management
    a. MongoDB schema design.
    b. Cloud database management with MongoDB Atlas.
3. **Week 7:** Testing and Debugging
    a. Writing unit tests (Jest, React Testing Library).
    b. Debugging and performance optimization.
4. **Week 8-9:** Deployment and CI/CD
    a. Setting up CI/CD pipelines.
    b. Deploying full-stack applications (AWS, Vercel).