

Master Program in Full Stack Web Development

Month 1: Frontend Development

Week 1-2: HTML, CSS, and JavaScript Basics

- Introduction to HTML5 and semantic markup
- Styling with CSS3, Flexbox, and Grid
- JavaScript fundamentals and DOM manipulation

Week 3-4: Frontend Frameworks - React.js

- React.js basics and component-based architecture
- State and props in React
- Handling forms and events in React

Week 5-6: Frontend Development Tools and Responsive Design

- Version control with Git and GitHub
- Introduction to npm and package management
- Responsive design principles and media queries
- Building responsive web pages

Month 2: Backend Development

Week 1-2: Server-Side Scripting with Node.js

- Introduction to Node.js and Express.js
- Building RESTful APIs with Express
- Handling middleware and routing

Week 3-4: Database Basics and MongoDB

- Introduction to databases (SQL and NoSQL)
- MongoDB basics and CRUD operations
- Connecting Node.js and Express with MongoDB

Week 5-6: Backend Authentication and Authorization

- User authentication using JWT
- Role-based access control
- Implementing secure password hashing

Month 3: Full Stack Development and Project Work

Week 1-2: Integration of Frontend and Backend

- Connecting React.js frontend with Node.js backend
- Handling API requests and responses
- Testing and debugging full-stack applications

Week 3-4: State Management and Advanced Frontend Topics

- State management in React (Redux)
- Advanced topics in frontend development (e.g., hooks, context)

Week 5-6: Final Project Work

- Participants work on a comprehensive full-stack project
- Project documentation and presentation

Month 4: Deployment, DevOps, and Advanced Topics

Week 1-2: Deployment and Continuous Integration

- Deploying applications on cloud platforms (e.g., Heroku, AWS)
- Implementing CI/CD pipelines with tools like Jenkins or GitHub Actions

Week 3-4: Advanced Backend Topics

- WebSocket communication
- Serverless computing and functions
- Performance optimization and caching strategies

Week 5-6: Advanced Frontend Topics and Final Review

- Progressive Web Apps (PWAs)
- Accessibility and performance optimization
- Review of key concepts and final preparation for interviews or certifications