

Below is a comprehensive syllabus for a Full Stack Website Development course covering frontend and backend technologies:

Course Title: Full Stack Website Development Course Syllabus

Course Description: This course provides a comprehensive overview of Full Stack Website Development, covering both frontend and backend technologies. Students will learn how to build dynamic and interactive websites using a combination of frontend technologies like HTML, CSS, JavaScript, and modern frameworks such as React.js, as well as backend technologies like Node.js, Express.js, and MongoDB. The course covers topics such as web design principles, responsive design, RESTful APIs, database integration, and deployment strategies.

Prerequisites: Basic understanding of HTML, CSS, and JavaScript. Familiarity with programming concepts is helpful but not required.

Course Objectives:

1. Understand the principles and technologies involved in Full Stack Website Development.
2. Learn how to design and develop responsive user interfaces using HTML, CSS, and JavaScript.
3. Gain proficiency in building dynamic web applications using frontend frameworks like React.js.
4. Develop skills in building RESTful APIs and handling server-side logic using Node.js and Express.js.
5. Explore database integration, authentication, and deployment strategies for full-stack web development.

Course Outline:

1. Introduction to Full Stack Website Development

- Overview of Full Stack development
- Frontend vs. Backend development
- Introduction to HTML, CSS, and JavaScript

2. Frontend Development Basics

- HTML5 markup and structure
- CSS styling and layout techniques
- Introduction to JavaScript programming

3. Responsive Web Design

- Principles of responsive design
- Media queries and flexible layouts
- Introduction to CSS frameworks like Bootstrap

4. Introduction to React.js

- Overview of React.js library
- Setting up React.js development environment
- Components and props in React.js

5. State Management in React.js

- Managing state with useState and useContext hooks
- Redux for state management in larger applications
- React Router for client-side routing

6. Backend Development with Node.js

- Introduction to Node.js and npm
- Creating a server with Express.js
- Routing and middleware in Express.js

7. Building RESTful APIs

- Designing RESTful endpoints
- Handling HTTP requests and responses
- Authentication and authorization with JWT

8. Database Integration with MongoDB

- Introduction to MongoDB and NoSQL databases
- Connecting Node.js applications to MongoDB
- Performing CRUD operations using Mongoose ODM

9. Authentication and Authorization

- Implementing user authentication with JWT
- Role-based access control (RBAC)
- Session management and cookies

10. Deployment and DevOps Practices

- Deployment strategies for full-stack web applications
- Continuous Integration and Continuous Deployment (CI/CD)
- Containerization with Docker and deployment on platforms like Heroku or AWS

11. Testing and Debugging

- Unit testing and integration testing with Jest
- Debugging techniques for frontend and backend code
- Error handling and logging best practices

12. Performance Optimization

- Techniques for optimizing frontend and backend performance
- Code splitting and lazy loading in React.js
- Database indexing and query optimization

Assessment:

- Weekly assignments to reinforce learning concepts.
- Midterm project: Developing a frontend website using HTML/CSS/JavaScript and a simple backend using Node.js/Express.js.
- Final project: Designing and implementing a Full Stack website application using React.js for frontend and Node.js/Express.js with MongoDB for backend.

Textbook: "Full Stack Development with React and Node" by Andrew Mead

Additional Resources:

- Online tutorials and documentation (MDN Web Docs, React.js official documentation, Express.js documentation, etc.).
- Supplemental readings and materials provided by the instructor.

Grading:

- Assignments: 30%
- Midterm Project: 20%
- Final Project: 40%
- Participation and Attendance: 10%

Attendance Policy: Regular attendance is expected. Students are allowed a maximum of three unexcused absences. Excessive absences may result in a reduction of the final grade.

Office Hours: Instructor office hours will be held twice a week for additional help and clarification.