

FULL STACK BATCH 6 SYLLABUS

For HTML, CSS, Bootstrap and JavaScript assignments, projects and exams will be held depending on the students calibre and eligibility

HTML

- HTML Basics
- HTML Elements
- HTML Attributes
- HTML Headings
- HTML Paragraph
- HTML Style
- HTML Formatting
- HTML Quotation
- HTML Comment
- HTML CSS
- HTML Link
- HTML Image
- HTML Table
- HTML List
- HTML Block and Inline
- HTML Id and Class
- HTML Iframe
- HTML Javascript
- HTML Responsive Website
- HTML Form
- HTML Form Elements
- HTML Form Inputs
- HTML Media
- HTML Video
- HTML Audio

CSS

- CSS Basics
- CSS Syntax
- CSS Selector
- Adding CSS
- CSS Comments
- CSS Background
- CSS Color
- CSS Border
- CSS Margin
- CSS Padding
- CSS Height & Width
- CSS Box Model
- CSS Outline
- CSS Text
- CSS Fonts
- CSS Icon
- CSS Links
- CSS List
- CSS Table
- CSS Display
- Position
- CSS Float
- Alignment
- CSS Combinators
- CSS Opacity
- Intro to RWD
- RWD Viewport
- RWD Grid
- RWD Media Query
- RWD Images

Bootstrap

- Bootstrap 5 Container
- Bootstrap 5 Grid
- Bootstrap 5 Colors
- Bootstrap 5 Table
- Bootstrap 5 Image
- Bootstrap 5 Alert
- Bootstrap 5 Button
- Bootstrap 5 Badge
- Bootstrap 5 Progress Bar
- Bootstrap 5 Spinners
- Bootstrap 5 Dropdown
- Bootstrap 5 Navbar
- Bootstrap 5 Forms
- Bootstrap 5 Input
- Bootstrap 5 Carousel
- Bootstrap 5 Utilities

SCSS

- Introduction and Setup
- Variables
- Nesting
- Map
- Partials
- Mixin
- Extend
- Functions
- Operators

JavaScript

- Hello World in JavaScript
- Variables in JavaScript
- What is Naming Convention?
- Comments in JavaScript
- How to connect JavaScript to an HTML page?
- What are Data Types in JavaScript?
- Basic Data Types
- Number
- String
- Booleans
- Null & Undefined
- Type of Operator
- Type Conversions in JavaScript
- Introduction to related Number and Math methods
- Introduction to related String methods
- What is an Array in JavaScript?
- Array traversing in JavaScript
- How to Search, Insert, Remove and
- Replace Elements from an Array
- Introduction to Multidimensional Array
- Arithmetic Operator
- Comparison Operators
- Logical Operators
- Assignment Operators
- Ternary Operator
- Operator Precedence in JavaScript
- Bitwise Operator
- What are Control Structures in programming
- If Condition
- Else Condition
- Else If Condition
- Switch Statements
- What is a loop?

- For Loop in JavaScript
- While Loop in JavaScript
- Do While Loop in JavaScript
- Nested Loop in JavaScript
- Break and Continue Statement in JavaScript
- What is Functions?
- How to Define and Invoke a Function?
- Arguments and Parameter in Functions
- Understanding Return from Functions
- Function Expression in JavaScript
- Deep Look into Functions (2 Class)
- What is Object Literal
- Object Properties & Methods in JavaScript
- Remove Object Properties
- Comparing Two Objects
- Iteration through Properties
- Understanding the DOM
- DOM Selection
- DOM Manipulation
- DOM Events

jQuery

- Introduction to jQuery
- DOM Selection with jQuery
- DOM Manipulation with jQuery
- jQuery Events
- jQuery Plugins
- jQuery vs Vanilla JS

React JavaScript

Introduction to Frontend Development

1. Why we need Frontend Development
2. How traditional Websites work
3. How modern Web Apps work
4. Let's First Use some modern Web App
5. Why React?
6. Major Topics of React To be Covered

React Components

1. Understanding Components from a Theoretical point of view
2. When will we create components?
3. Two major building blocks of Components - I) Data Layer II) Presentation

Layer

4. Understanding Components from Code Level
5. Props- Why and How
6. Component Composition

*****Assignment 1 - Create A BioData Type simple App with React Components*****

React State - use State (Our First React Hook)

1. Why do we need a state?
2. What is a State?
3. How to use State in React
4. Concept of Immutability in React State mechanism
5. Building a Counter Application with the power of React State

*****Assignment 2 - Create A Simple Counter Application*****

- Events Handling in React

- **Form Handling in React**
- **Two-way data binding in React**
- **Working with Lists**
- **Conditional Rendering in React**
- **Virtual DOM and Rendering mechanism in React**

*****Project 1 - Assignment 3 - Creating a Note-Taking Application*****

*****Project 2 - Assignment 4 - Creating a Simple Student Attendance Application*****

- **State Lifting in React - What, Why, How**

*****Assignment 4 - Recreate the Student Attendance Application with the State Lifting mechanism*****

- **React Context API - What, Why, How**

1. use context Hook
2. How to create context
3. How to pass data through Context API

- *****Assignment 5 -** **Recreate the Student Attendance Application with the Context API*****

- **Working with 3rd Party APIs - use effect Hook**
- **How to create a full fake API with the ***JSON-server*** package**
- **How to create HTTP requests in React Application**
 1. GET request - Data Fetching
 2. POST request - Data creation
 3. PUT/PATCH method - Data updating
 4. DELETE method - Data removing
- **Handling Complex States - useReducer Hook**
- **Using useReducer together with Context API to manage complex Global State**
- **React Router - Frontend Routing**

*****Project 3 - Assignment 6- Creating a Trello Clone (A Project Management Application) from Frontend with React*****

- **Debugging in React Apps**
- **Styling options in React**
- **useRef Hook - How to get access directly to the DOM through React**
- **React Fragments**

-Performance Optimization in React

1. memo Function
2. useMemo Hook
3. useCallback Hook

- Custom Hooks - Creating our own React Hooks!

- Redux - The most Popular State management tool for React

1. Why we need Redux
2. Redux vs Context API
3. Reducers in Redux
4. Dispatching Actions in Redux
5. Action Creator in Redux
6. Asynchronous Actions in Redux - Redux Thunk
7. use selector hook to access state in Redux
8. useDispatch hook to dispatch actions in Redux
9. Redux Middlewares
10. Redux Devtools

- **Project 4 - Assignment 7 - Creating a Full Featured Shopping Cart Application using Redux**

- Redux Toolkit - A more accessible approach to using Redux

- **Assignment 8 - Recreating the Shopping Cart Application using Redux Toolkit**

- A more accessible approach to data fetching - React Query and Redux Toolkit Query

- Next Js - The production-grade React Framework

1. What is Next Js
2. Why do we need it
3. Client-Side Rendering vs Server-Side Rendering
4. Routing and Dynamic Routing in Next JS
5. Important features of Next Js
6. Static Site Generation
7. Incremental Static Generation
8. Server-Side Rendering

- Error Boundary in React

- Class-based components in React

- Higher-order Components in React

- Code Splitting in React

- **Project 5 - Assignment 9 - Create a complete E-commerce/Blog Application with Authentication, Authorization (Both User Facing Application and Admin Dashboard (minimalist) Application)**

Python:

1. Introduction to Python, installing Python, setting up IDE, and running your first Python code
2. Basic I/O
3. Basic data types
4. Arithmetic & logical operations
5. Python variables and built-in functions
6. Python libraries - installing and using them, NumPy, math
7. Python strings - creation, slicing, manipulation, and methods
8. Conditional operation
9. Python lists - creation, manipulation, and functions
10. Python tuples - creation, manipulation, and functions
11. Python dictionaries - creation, manipulation, and functions.
12. Looping - while loop and for loop
13. List comprehension using looping
14. User-defined functions in python - structure, arguments, returning values and using them in a program
15. Using functions as arguments in another function
16. Python sets and sets functions
17. Random numbers in Python
18. Python file I/O, reading and writing using files.
19. Some useful Python libraries - pandas, NumPy, matplotlib, SciPy
20. Python errors: understanding and handling them
21. Try catch block in Python
22. OOP in python - introduction, writing a class, creating objects
23. Constructors and Destructors
24. Inheritance in Python OOP

Backend Project with Python - creating a game, management system, or any functional content

Django:

1. Introduction to Django, setting up a virtual environment
2. Creating a Django project
3. Understanding each component in the project
4. Running the Django project
5. Creating a Django app
6. Url configuration and routing
7. Views and writing a view function
8. Creating and running a simple static webpage.
9. Page redirection using views and URL pattern

Assignment - Create a fully functional static website

10. Passing data to a webpage
11. Django database: introduction, built-in database, and manual connection
12. Adding, retrieving, and deleting data from a database
13. Running SQL code on the database
14. Making a website dynamic with a database.
15. Database and Models
16. Writing our first model
17. Django model data types
18. File handling in Django: image, audio, video, etc
19. Static and media directory settings in Django
20. Django admin module: introduction
21. Functionalities of admin module

Assignment: Creation of a dynamic site with admin controls (e.g - a library manager)

22. Django forms introduction and creation.
23. Storing data in a database using forms
24. Using crispy for forms
25. Creating a simple login logout feature on a webpage.

Project: Creating a simple version of IMDB

Project: Creating a simple e-commerce platform

Project: Individual project with Django and frontend tools

SQL :

1. Data and Database
2. Schema, Tables, Fields, Records
3. Data Types in Database
4. Primary & Foreign Keys
5. Entity Relationships: one to one, one to many, and many to many
6. What is SQL, the definition of DDL, DML, DCL, DQL
7. DQL: the Select statement
8. Where Keyword
9. Conditions in SQL
10. Order by and Group by
11. Join keyword
12. Aggregate functions
13. Sub-Queries
14. DDL: Create, Alter and Drop
15. DML: Insert, Update, Delete and Select
16. DCL: Commit, Rollback, etc
17. Writing Complex queries