

## Frontend 2nd Web Full Stack Development Curriculum

Academic Year: 2025-2026

Frontend

Full Stack Course Training

### COURSE DESCRIPTION

This course offers an immersive journey into modern frontend development with Next.js. Students will master creating responsive, dynamic websites while learning essential UI/UX design principles. Starting with core web fundamentals, the course progresses to advanced Next.js concepts including server-side rendering, static site generation, and API integration. Students will develop the skills to build visually appealing, high-performance web applications.

### COURSE OUTLINE

**H/Q:** Homework, Quiz, Classwork





**T:** Class Teaching ( Theory and Practical )





**P:** Presentation

| N° | Content   | Date        | P | T | H/Q |
|----|---|-------------|---|---|-----|
| 1  | <b>Introduction to Web Development</b> <ul style="list-style-type: none"><li>α Introduction to Web Development<ul style="list-style-type: none"><li>o Three-tiers web development</li><li>o Evolution of web</li></ul></li><li>α Internet History</li><li>α How does internet work</li><li>α What is http?</li><li>α What is a domain name? How does it work?</li><li>α What is hosting?</li><li>α Browser and how do they work?</li><li>α Searching technique in google</li><li>α Essential web development tools and technologies<ul style="list-style-type: none"><li>o Client-side vs Server-Side</li></ul></li></ul> | 16-Dec-2025 | ✓ |   |     |

|   |  |             |   |  |   |
|---|--|-------------|---|--|---|
|   | <ul style="list-style-type: none"> <li>Development <ul style="list-style-type: none"> <li>o Full Stack Development</li> </ul> </li> <li>α Search Engine Optimization</li> </ul> <p><b>HTML</b></p> <ul style="list-style-type: none"> <li>α Basic Terminology</li> <li>α HTML Editors</li> <li>α Construction of Web Page</li> <li>α Core Tags in HTML</li> </ul>  |             |   |  |   |
| 2 | <p><b>HTML – Part [1]</b></p> <ul style="list-style-type: none"> <li>α Adding Content</li> <li>α HTML Basic Style</li> <li>α HTML Images and File Path</li> <li>α Icons</li> <li>α Block and Inline</li> <li>α Semantic and Accessibility <ul style="list-style-type: none"> <li>o Understanding semantic HTML and its benefits</li> <li>o Using semantic elements (header, nav, section, article, footer)</li> <li>o Enhancing accessibility with proper markup</li> <li>o Improving SEO with semantic HTML</li> <li>o Build Layout with Semantic Tags</li> </ul> </li> </ul> | 18-Dec-2025 | ✓ |  |   |
| 3 | <p><b>HTML – Part [2]</b></p> <ul style="list-style-type: none"> <li>α Links</li> <li>α Iframe</li> <li>α Table</li> <li>α List</li> <li>α Form</li> <li>α Responsive Web Design</li> <li>α HTML Cheat-Sheet</li> <li>α HTML Entities &amp; Charset</li> <li>α <b>Lesson Recap and Group Discussion</b></li> </ul>   | 19-Dec-2025 | ✓ |  | ✓ |
| 4 | <p><b>CSS – Part [1]</b></p> <ul style="list-style-type: none"> <li>α Getting started with CSS</li> <li>α Syntax &amp; Selectors</li> <li>α Selector Priorities</li> <li>α Text</li> </ul>   | 22-Dec-2025 | ✓ |  |   |

|   |  |                              |   |   |   |
|---|--|------------------------------|---|---|---|
|   | <ul style="list-style-type: none"> <li>α Links</li> <li>α Fonts</li> <li>α List</li> <li>α Tables</li> <li>α Background</li> <li>α Box Model</li> <li>α Pseudo-Class and Elements</li> </ul>   |                              |   |   |   |
| 5 | <b>CSS - Part [2] - CSS Layout</b> <ul style="list-style-type: none"> <li>α Introduction</li> <li>α Normal Flow</li> <li>α Display property</li> <li>α Flexbox</li> <li>α Grid</li> <li>α Floats</li> <li>α Positioning</li> <li>α Responsive Web Design ( Media Query )</li> <li>α <b>CSS</b> Variables</li> </ul> <b>Lesson Recap and Group Discussion</b> | <b>23 to 24<br/>Dec-2025</b> | ✓ | ✓ | ✓ |
| 6 | <b>CSS Animation</b> <ul style="list-style-type: none"> <li>α Introduction</li> <li>α Configure an animation</li> <li>α Keyframe</li> <li>α Animation Shorthand</li> <li>α CSS Transform</li> <li>α Lottie Animation</li> </ul>  | <b>25-Dec-2025</b>           | ✓ |   |   |

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| 7 | <b>TailwindCSS</b> <ul style="list-style-type: none"> <li>α Overview</li> <li>α Installation</li> <li>α Five Breakpoints</li> <li>α Handling Hover, Focus, and Other States</li> <li>α Dark ModeColor</li> <li>α Spacing</li> <li>α Container VS Container Query</li> <li>α Configuring Variants</li> <li>α Columns</li> <li>α Grid Template Columns</li> <li>α Size</li> <li>α Typography</li> <li>α Components</li> <li>α Custom Style In Tailwind</li> </ul> <p>Case Study: Design Static Web Page</p> <ul style="list-style-type: none"> <li>• E-Commerce Clone</li> <li>• Social Media Clone</li> </ul> | 26, 30<br>Dec-2025         |  |    |   |
| 8 | <b>UX and UI Design</b> <ul style="list-style-type: none"> <li>α UX and UI Overview</li> <li>α The Workflow</li> <li>α The principle</li> <li>α Minimalism Design</li> <li>α Design Tool Usage</li> <li>α Resource and Reference</li> <li>α Practice with Figma</li> </ul>   | 31 Dec<br>to<br>5 Jan-2026 |  |  |  |
|   | <b>Mini-Project 01</b> <ul style="list-style-type: none"> <li>α Topic will be provided</li> </ul> <p><b>Achievement:</b></p> <ul style="list-style-type: none"> <li>α <b>Design</b> Static Website</li> <li>α Using <b>Semantic Tags</b></li> <li>α Responsive (Laptop, Tablet, Mobile Phone)</li> <li>α UX/UI <b>Design Enhancement</b></li> </ul>  |                            |  |   |  |


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| 9  | <b>TypeScript - Part [1]</b> <ul style="list-style-type: none"> <li>α JavaScript Overview <ul style="list-style-type: none"> <li>○ What is JavaScript?</li> <li>○ New Features in JavaScript <ul style="list-style-type: none"> <li>▪ Variable (let, const,...)</li> <li>▪ Functions (arrow functions, async/wait, callback,...)</li> <li>▪ Promise Object, Map Objects, Set Objects, Classes</li> </ul> </li> </ul> </li> <li>α Introduction Into TypeScript <ul style="list-style-type: none"> <li>○ Overview</li> <li>○ Setting Up The Development</li> <li>○ Configuration TypeScript Compiler</li> </ul> </li> </ul> | <b>6 to 9 Jan-2026</b>   |  |    |  |
| 10 | <b>TypeScript - Part [2]</b> <ul style="list-style-type: none"> <li>α Fundamental of TypeScript <ul style="list-style-type: none"> <li>○ Built-in Type</li> <li>○ The any Type</li> <li>○ Arrays</li> <li>○ Enums</li> <li>○ Tuples</li> <li>○ Functions</li> <li>○ Objects</li> </ul> </li> </ul>  | <b>12, 13 Jan 2026</b>   |   |  |  |
| 11 | <b>TypeScript - Part [3]</b> <ul style="list-style-type: none"> <li>α Advanced of TypeScript <ul style="list-style-type: none"> <li>○ Type Aliases</li> <li>○ Interface</li> <li>○ Generics</li> <li>○ Union Types</li> <li>○ Intersection Types</li> <li>○ Literal Types</li> <li>○ Nullable Types</li> <li>○ Optional Chaining</li> <li>○ Conditional Types</li> <li>○ Async/await</li> <li>○ Destructuring</li> <li>○ Spread/rest Operator</li> <li>○ Arrow Function</li> </ul> </li> </ul>  | <b>14 to 16 Jan-2026</b> |   |  |  |

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| 12 | <p><b>Next Js - Part [1]</b></p> <ul style="list-style-type: none"> <li>α React VS Next.js <ul style="list-style-type: none"> <li>o Core differences between React and Next.js</li> <li>o When to use React vs Next.js</li> </ul> </li> <li>α Rendering User Interface (DOM) <ul style="list-style-type: none"> <li>o Understanding the Virtual DOM</li> <li>o React's rendering process</li> <li>o Component lifecycle</li> <li>o Reconciliation algorithm</li> <li>o DOM manipulation in React</li> </ul> </li> <li><b>React Core Concepts</b> <ul style="list-style-type: none"> <li>o Components <ul style="list-style-type: none"> <li>▪ What are the components?</li> <li>▪ Components trees</li> <li>▪ Creating Components</li> <li>▪ JSX and Components</li> <li>▪ Rule of JSX</li> <li>▪ Module Export and Import</li> </ul> </li> <li>o Props <ul style="list-style-type: none"> <li>▪ What are props?</li> <li>▪ Basic Props Syntax</li> <li>▪ Destructuring props</li> <li>▪ Object as Props</li> <li>▪ Props validation and default props</li> <li>▪ Children props</li> <li>▪ Rendering Lists with Array Method</li> <li>▪ Conditional Rendering with Ternary Operator and Logical Operator</li> </ul> </li> <li>o State <ul style="list-style-type: none"> <li>▪ What is the State?</li> <li>▪ State: Component's memory</li> <li>▪ State Hook</li> <li>▪ Effect Hook</li> </ul> </li> </ul> </li> <li>α Overview of Next.js</li> <li>α Installation of Next.js</li> <li>α Styling <ul style="list-style-type: none"> <li>o CSS Modules</li> <li>o Tailwind CSS integration</li> <li>o CSS-in-JS Solutions (Styled</li> </ul> </li> </ul> | 19 to 23<br>Jan-2026 |  | ✓ |  |
|----|--|----------------------|--|---|--|

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|----|--|-------------------------------------|--|---|--|
|    | <p>Components, Emotion)</p> <ul style="list-style-type: none"> <li>o Global styles vs component-scoped styles</li> </ul> <p>α Data Fetching Classwork</p>  |                                     |  |   |  |
| 13 | <p><b>Next Js - Part [2]</b></p> <p>α <a href="#">Routing</a></p> <ul style="list-style-type: none"> <li>o Layouts and Templates</li> <li>o Linking and Navigating</li> <li>o Error Handling</li> <li>o Loading UI and Streaming</li> <li>o Redirecting</li> <li>o Route GroupsRoutes</li> <li>o Dynamic</li> <li>o Parallel Routes</li> <li>o Intercepting Routes</li> <li>o Route Handlers</li> </ul> <p>α Data Fetching</p> <ul style="list-style-type: none"> <li>o <a href="#">Fetching data in Server Components</a></li> <li>o <a href="#">Fetching data in Client Components</a></li> <li>o <a href="#">Streaming with Suspense</a></li> <li>o Reusing data across multiple functions</li> <li>o Patterns</li> <li>o <a href="#">Incremental Static Regeneration (ISR)</a></li> <li>o Environment Variables</li> </ul> | <p><b>26 to 30<br/>Jan-2026</b></p> |  | ✓ |  |
| 14 | <p><b>Next Js - Part [3]</b></p> <p>α Optimizations</p> <ul style="list-style-type: none"> <li>o Image optimization with next/image</li> <li>o Link prefetching with next/link</li> <li>o Font optimization with next/font</li> <li>o <a href="#">Script</a></li> </ul> <p>α <a href="#">Search and Pagination</a></p> <ul style="list-style-type: none"> <li>o Implementing search functionality</li> <li>o URL search parameters</li> <li>o Server and client pagination strategies</li> <li>o Infinite scrolling implementation</li> </ul> <p>α API References</p> <ul style="list-style-type: none"> <li>o Functions <ul style="list-style-type: none"> <li>▪ UseSearchParams</li> <li>▪ useParams</li> </ul> </li> </ul>  | <p><b>2 to 5 Feb<br/>2026</b></p>   |  | ✓ |  |

|    |  |               |  |   |   |
|----|--|---------------|--|---|---|
|    | <ul style="list-style-type: none"> <li>▪ usePathname</li> <li>▪ useRouter</li> <li>▪ Redirect</li> <li>▪ generateMetadata</li> <li>▪ generateSitemap</li> <li>▪ headers</li> <li>▪ cookies</li> <li>▪ unauthorized</li> <li>o File-system conventions <ul style="list-style-type: none"> <li>▪ src</li> <li>▪ public</li> <li>▪ default.js</li> <li>▪ loading.js</li> <li>▪ layout.js</li> <li>▪ error.js</li> <li>▪ not-found.js</li> <li>▪ page.js</li> <li>▪ forbidden.js</li> <li>▪ Metadata File</li> <li>▪ middleware.js</li> </ul> </li> <li>o Configurations <ul style="list-style-type: none"> <li>▪ env</li> <li>▪ Images</li> <li>▪ basePath</li> <li>▪ crossOrigin</li> <li>▪ proxy</li> </ul> </li> </ul> |               |  |   |   |
| 15 | <p><b>Next Js - Part [4]</b></p> <p>α State and Hook Management</p> <ul style="list-style-type: none"> <li>o <b>useState</b> for local state</li> <li>o <b>useEffect</b> for side effects</li> <li>o <b>useContext</b> for global state</li> <li>o <b>useReducer</b> for complex state logic</li> <li>o <b>useCallback</b> and <b>useMemo</b> for optimization</li> <li>o <b>Custom hooks</b> for reusable logic</li> <li>o <b>Adding Activities</b> with state updates</li> <li>o <b>Event Handling</b> in React components</li> </ul> <p>α Form Validation (Using react hook form + zod)</p> <ul style="list-style-type: none"> <li>o Introduction</li> </ul>  | 6-13 Feb 2026 |  | ✓ | ✓ |



|    |   |                                 |  |   |  |
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|    | <ul style="list-style-type: none"> <li>o Installation &amp; Setup</li> <li>o Using useForm, register, handleSubmit</li> <li>o Adding zod - Validation Schema</li> </ul> <p>α Authentication</p> <ul style="list-style-type: none"> <li>o Authentication strategies (OAuth, JWT, etc.)</li> <li>o Implementing protected routes</li> <li>o Next.js Middleware for auth checks</li> <li>o Session management</li> <li>o Middleware</li> </ul> <p>α NextJS - Third-Party Libraries</p> <ul style="list-style-type: none"> <li>o Data Table</li> <li>o Formik for validation</li> <li>o Redux and RTK Query</li> <li>o Next-Auth (Keycloak)</li> </ul> <p>α Metadata</p> <ul style="list-style-type: none"> <li>o SEO optimization with metadata</li> <li>o Open Graph and Twitter card metadata</li> <li>o Dynamic metadata generation</li> <li>o Preparing content for social sharing</li> <li>o robots.txt File</li> <li>o XML SiteMaps</li> <li>o SEO Impact</li> <li>o Special Meta Tags For Search Engine</li> <li>o Rendering Strategy</li> <li>o Next.js Speed Insight</li> </ul> <p>α <b>Practice A Mini Project</b></p> <ul style="list-style-type: none"> <li>o <b>A BookShare - A Book Review Platform</b></li> </ul> |                                 |  |   |  |
| 16 | <p><b>Next Js - Part [5]</b></p> <p>α Next Js with Shadcn/ui</p> <ul style="list-style-type: none"> <li>o Introduction</li> <li>o Install and configure shadcn/ui for Next.js</li> </ul> <p>α Create Project</p> <p>α Add Components</p> <p>α Next.js MCP Server for Coding Agents</p> <p>α Testing with Next.Js (cypress...)</p>   | <p><b>16 to 20 Feb-2026</b></p> |  |  |  |

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|  | <ul style="list-style-type: none"> <li>o Install Cypress and add the script and config</li> <li>o Add the data-cy attributes to the elements to test</li> <li>o Write the Test</li> <li>o Run the Test</li> </ul>   |  |  |  |   |
|  | <b>Mini Project 02</b><br>α Topic will be provided<br><b>Objective:</b><br>α Understand Next.js<br>α Enhance Frontend Skill<br>α SEO Implementation<br>α Project Structure and Reusable<br>α Team Collaboration ( GIT )<br>α Understand architecture pattern<br><b>Common Features:</b><br>α Data Fetching<br>α Authentication<br>α Localization<br>α Data Validation<br>α CRUD |  |  |  | ✓ |

**Note:** date is subject to change due to we will have additional topics to add on such as database, basic web security,..

## TEACHING AND LEARNING ACTIVITIES

1. Attendance in class and completion of all tasks, quizzes and assignments is required and counts towards your final score.
2. If you miss a class, you must catch up on all the content and ensure that you understand the content. It is your obligation to ask the lecturer or classmates about any class you missed.
3. You are expected to pay attention to what is being taught during the class. Please be respectful when your classmates, or lecturer are presenting.

## ASSESSMENT METHOD

Coursework will be assessed as follows:

|                                |     |
|--------------------------------|-----|
| Attendance & Class Participant | 10% |
| Classwork, Homework            | 15% |
| Presentation                   | 15% |
| Mini Project                   | 20% |
| Exam                           | 40% |

### References:

Next js: <https://nextjs.org/learn/dashboard-app>

Next Js with Shadcn: <https://ui.shadcn.com/docs/installation/next>

SEO : <https://nextjs.org/learn/seo/importance-of-seo>