## Detailed Curriculum

### PRE WORK (4w): Introduction to Programming

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| **Introduction to Web Development** | Web Vs App Development, Webpage - A building block of web development, Traditional Vs Modern Web App, Server Side Coding Technologies |
| **Introduction to MERN Stack** | Introduction to Node Js, Express JS, MongoDB, React. Understanding a a basic MERN Application. |
| **Introduction to GIT** | Various operations in Git, git init, git pull, git commit, git add, git push, git merge, git diff |
| **Setting up the system** | Installation of VS Code, Github, MongoDB Compass |

### MODULE 1 (13w): CS Fundamentals & Frontend Development

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| **HTML** | Page structure, Elements, Tags, Input attributes, HTML5 tutorial |
| **CSS** | Syntax, Selectors, Specificity, Properties, Layout |
| **Basics of Javascript 1** | Comments, Data Types, Operators, Branching and Looping in JS, Functions |
| **Basics of Javascript 2** | IIFE, Scope of Variables, Declaring Objects, Working with Objects, JSON Format , Function call |
| **DOM Manipulation** | Document Object Model, Working with DOM Objects, Queryselector, innerHTML, Manipulating CSS, Add/Remove classes, Manipulating Attributes, DOM Event Listener |
| **Javascript ES6 and OOP** | ES6, let, const, destructuring ,Rest Operator, Spread Operator, Defining Class in ES6, Inheritance from Class, OOP (Polymorphism, Encapsulation) using ES6, Iterables , forEach |
| **Data Structures using JS** | Arrays, Math Functions, String Functions, Data Structure in JS, Time and Space Complexity, Stack, Linear Search and Binary Search |
| **Advanced Javascript** | Hoisting, Prototype, Strict Mode, Try Catch Block, Promises, Ajax, Async Await, Local Storage, Session Storage |
| **JQuery** | Syntax, Selectors, DOM Manipulation, CSS Manipulation, Working with Ajax |
| **ReactJS** | Creating React App, JSX, React Components and Props, Styling React Components, React Fragments, React Hooks and Context, Conditional Rendering, React Constructors, React Refs |

### MODULE 2 (5w): Databases

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| **SQL** | Relational Database, Querying, Joining Tables, Creating Database and adding business logic, MySQL tutorial + Normalisation |
| **NoSQL** | Introduction to Mongoose DB(Version of MongoDB), Creating Database, Creating Collections, CRUD Operations, Mongoose Schema and Models. |

| MODULE 3 (5w): Backend development | |
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| **NodeJS** | Rendering HTML, Working with Files, MVC Pattern, Sessions And Cookies, Authentication and Authorization |
| **ExpressJS** | Routing and HTTP Methods, Middleware, Cookies REST API, Error Handling, Integrating React and Express |
| **Testing** | Unit test case: Unit testing using open sources tools, Browser and System testing automation |
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| **Cloud Deployment** | |
| **Cloud Foundations** | AWS Console, IAM, Roles, EC2, Lambda, DocumentDB |
| **Deployment of MERN App on AWS** | Code Deployment using Code Pipeline and Cloud Formations, Configuring Nginx for Backend and Frontend |