Complete Web Development & AI Course (For Class 4th – 12th)

Introduction

This course is made for students who want to learn programming in a simple and practical way. We start from the very basics like how a website works and slowly move towards advanced topics like databases, backend development, and Artificial Intelligence.

Each topic includes small projects so students can practice what they learn. By the end of the course, every student will be able to build a complete web application with HTML, CSS, JavaScript, MySQL, Node.js, and even connect AI features using ChatGPT.

The course usually takes around **4 months**, but the duration can be longer depending on each student's learning speed.

Course Outline (For Class 4th – 12th)

1. Introduction to Web Development

- What is a Website? How the Internet works

- Client vs. Server

- Tools Setup → Browser, VS Code, Node.js, MySQL

2. HTML – Structure of a Webpage

- Basics of HTML & Document structure

- Tags: `<p>`, `<h1>...<h6>`, `<table>`, `<ul>/<ol>`, `<img>`, `<a>`

- HTML Forms → `<input>`, `<button>`, `<radio>`, `<checkbox>`, `<textarea>`

- Semantic HTML (intro: `<header>`, `<footer>`, `<section>`, `<article>`)

Mini Project → Student Profile Page (with table, image, and form)

3. CSS – Styling Webpages

- Inline, Internal, External CSS

- Colors, Fonts, Backgrounds

- Borders, Padding, Margin

- Using Classes & IDs

- Basic Layout → Flexbox intro

Mini Project → Create a Student Report Card Design

4. JavaScript – Making Pages Interactive

- Console, Alert, Onclick Event

- Variables & Data Types (string, number, boolean)

- Arithmetic, Assignment, Logical, Comparison Operators

- If-Else, Loops (for, foreach), Break & Continue

- Arrays (push, pop, shift, unshift)

- String Concatenation & Type Casting

- Functions (with parameters, return values)

Mini Project → Simple Calculator App

5. DOM Manipulation

- Select elements (getElementById, querySelector)

- Change text, styles, attributes

- Create & delete elements dynamically

Mini Project → To-Do List Application (CRUD operations with LocalStorage)

6. API & JSON

- What is an API? What is JSON?

- Fetch data from JSONPlaceholder

- Show posts, comments, users on webpage

Mini Project → News Feed App (using JSONPlaceholder API)

7. Databases – MySQL Basics

- What is a Database? RDBMS Concepts

- Tables, Primary key, Foreign key, Unique key

- Relationships (1-to-1, 1-to-many, many-to-many)

- SQL Commands → CREATE, SELECT, INSERT, UPDATE, DELETE

- Joins (INNER, LEFT, RIGHT), WHERE, ORDER BY, GROUP BY

- Stored Procedures & Functions

Mini Project → School Management Database (Tables: Student, Teacher, Courses, StudentCourse)

8. Backend – Node.js & Web API

- Intro to Node.js & Express.js

- Create simple REST API

- CRUD operations with MySQL

- Connect frontend (HTML/CSS/JS) to backend API

Mini Project → Student Management System (Full CRUD App)

9. AI Integration (ChatGPT API)

- What is an API Key & Environment Variable?

- How to call ChatGPT API from Node.js

- Send user prompt & display AI response on webpage

- Explore ideas: Homework Helper, Grammar Checker, Quiz Generator

Mini Project → AI Chat Assistant (students build their own chatbot)

10. Final Capstone Project

Students will combine HTML + CSS + JS + Database + Node.js API + ChatGPT API.

- ◆ **Project Ideas:**

  - AI-Powered Quiz System → Create quizzes using ChatGPT API, store results in MySQL

  - Homework Helper Bot → Students ask questions, AI responds, history saved in DB

  - Mini Blog Website → CRUD posts with MySQL + API, add ChatGPT for auto-suggestions

  - AI Dictionary / Translator → Students enter words, ChatGPT explains/defines