Full Stack Course Syllabus:

HTML, JavaScript, CSS, Python Fundamentals, and Basic AI Integration

Course Structure:

- **Duration:** 32 sessions
- **Session Length:** 4 hours
- **170 Academic Hours**

Course Objective:

This course aims to provide students with the fundamental skills needed to build web applications using modern web technologies, integrate Python for backend fundamentals, and introduce basic AI-powered features. By the end of the course, students will have the foundational knowledge to pursue careers in web development and understand how to integrate basic AI and backend functionalities.

Technologies Covered:

- **Frontend:** HTML, CSS, JavaScript (ES6+), DOM Manipulation, Responsive Design
- **Backend:** Python, Node.js, Express.js
- **Database:** MongoDB (CRUD operations)
- **Version Control:** Git, GitHub
- **APIs:** RESTful APIs, Fetch API
- **Basic AI Tools:** AI APIs (OpenAI), Chatbots

Why This Course is Important for Tech Careers:

Full-stack developers with knowledge of Python and basic AI concepts have a strong advantage in the tech job market. This course covers foundational web development and backend skills, along with AI integration, equipping students with essential tools to succeed.

Session Breakdown

Session1: Network Fundamentals

- **Content:** Overview of network infrastructure, protocols, TCP/IP

Session 2: Introduction to Full Stack Development

- **Content:** Overview of Full Stack development

Session 3: Introduction to Full Stack Development

- **Content:** Full Stack – Web Development vs. Web Building

Session 4: Network Fundamentals

- **Contents:** Overview of IP Addresses, DNS, HTTP/S, Routing Protocols

Session 5: Introduction to Full Stack Development

- **Content:** Web development – how to build a website.

Session 6: Introduction to Web Development

- **Content:** Overview of web development, the role of frontend and backend, introduction to HTML structure
- **Demo:** Creating a basic HTML webpage
- **Practice:** Build a simple personal homepage

Session 7: HTML Basics

- **Content:** Elements and attributes, headings, paragraphs, links, and lists
- **Demo:** Structuring an informational webpage
- **Practice:** Create a structured content page

Session 8: HTML Media Elements

- **Content:** Adding images, embedding videos, working with tables
- **Demo:** Build a multimedia portfolio page
- **Practice:** Create a gallery webpage with text and media

Session 9: Introduction to CSS

- **Content:** CSS basics, selectors, properties, and text styling
- **Demo:** Styling a basic webpage
- **Practice:** Add styles to an existing personal homepage

Session 10: Advanced CSS

- **Content:** Box model, margins, padding, borders, and colors
- **Demo:** Building styled cards for a webpage
- **Practice:** Create and style personal info cards

Session 11: CSS Layouts

- **Content:** Flexbox basics, building responsive layouts
- **Demo:** Creating a flexible webpage layout
- **Practice:** Build a simple responsive layout for a webpage

Session 12: Introduction to JavaScript

- **Content:** Variables, data types, operators, and basic functions
- **Demo:** Create a JavaScript-based calculator
- **Practice:** Write simple functions for user interactions

Session 13: JavaScript Conditions and Loops

- **Content:** Conditional statements, loops (for, while)
- **Demo:** Create a simple program to filter data
- **Practice:** Build a dynamic list filtering application

Session 14: DOM Manipulation

- **Content:** Accessing and modifying DOM elements, event listeners
- **Demo:** Real-time content updates using JavaScript
- **Practice:** Create an interactive to-do list

Session 15: JavaScript Events

- **Content:** Handling user events, advanced event listeners
- **Demo:** Interactive buttons that update content dynamically
- **Practice:** Create a dynamic form with validation

Session 16: Introduction to APIs

- **Content:** What are APIs, fetching data using the Fetch API
- **Demo:** Fetch and display weather data from an API
- **Practice:** Build an API-based news display page

Session 17: Midterm Project Planning

- **Content:** Project guidelines, teamwork skills, dividing tasks
- **Practice:** Begin a small team-based project

Session 18-20: Python Fundamentals

- **Content:**
  - **Session 18:** Introduction to Python, data types, variables, and basic I/O
  - **Session 19:** Control structures (if, loops), functions, and error handling
  - **Session 20:** Python data structures (lists, dictionaries, sets, and tuples)
- **Demo:** Writing Python scripts for common tasks
- **Practice:** Solve coding challenges using Python fundamentals

Session 21-22: Backend with Node.js using Python Concepts

- **Content:**
  - **Session 21:** Introduction to Node.js, setting up a basic server, using Express.js
  - **Session 22:** Applying Python logic to Node.js (e.g., processing data, creating endpoints)
- **Demo:** Building a simple server that handles data requests
- **Practice:** Create a basic backend for a frontend project

Session 23: Version Control with Git and GitHub

- **Content:** Git basics, repository creation, commits, and branches
- **Demo:** Push a project to GitHub
- **Practice:** Collaborate on a team project using GitHub

Sessions 24-27: Advanced Development and Final Project Work

- **Content:** Develop dynamic web applications, enhance projects with optional AI
- **Practice:** Work on final project development with integrated AI and backend features

Session 28-29: MongoDB Integration

- **Content:** Introduction to databases, CRUD operations with MongoDB
- **Practice:** Create a simple database-driven application

Session 30-31: Final Project Completion

- **Content:** Finalizing the project, testing, and documentation
- **Practice:** Present final projects with working features

Session 32: Final Presentations and Summary

- **Content:** Project presentations, feedback, and course review
- **Practice:** Showcase completed projects to the class

Pre-Requisites:

- Personal computer
- Internet access
- Basic computer usage skills

Expected Outcome: Upon completing the course, students will be able to create dynamic websites with client-server functionality, integrate basic AI features like chatbots, and manage projects using GitHub. They will also have a foundational understanding of Python for backend development, allowing them to build and scale robust web applications.

Skyware Information Technologies

GREENTECH HUB LTD גרינטק האב בע"מ

צופן תשבץ שינוי מכליל בהייטק

תכנית ולוח זמנים:

	יום	שעות	תאריך	מרצה	נושא
1	ג	16:00-20:00	17/12/24	והדאן	Network Fundamentals
2	ה	15:00-18:00	19/12/24	סאלח	Introduction to Full Stack Development
3	א	16:00-20:00	22/12/24	סאלח	Introduction to Full Stack Development
4	ג	16:00-20:00	24/12/24	והדאן	Network Fundamentals
5	ה	16:00-20:00	26/12/24	סאלח	Introduction to Full Stack Development
6	א	16:00-20:00	29/12/24	נימר	**Introduction to Web Development**
7	ג	16:00-20:00	31/12/24	והדאן	Python
8	ה	16:00-20:00	02/01/25	נימר	HTML Basics
9	א	16:00-20:00	05/01/25	נימר	HTML Media Elements
10	ג	16:00-20:00	07/01/25	והדאן	Python
11	ה	16:00-20:00	09/01/25	נימר	Introduction to CSS
12	א	16:00-20:00	12/01/25	נימר	Advanced CSS
13	ג	16:00-20:00	14/01/25	והדאן	Python
14	ה	16:00-20:00	16/01/25	נימר	CSS Layouts
15	א	16:00-20:00	19/01/25	נימר	Introduction to JavaScript
16	ג	16:00-20:00	21/01/25	נימר	JavaScript Conditions and Loops
17	ה	16:00-20:00	23/01/25	נימר	DOM Manipulation
18	א	16:00-20:00	26/01/25	נימר	JavaScript Events
19	ג	16:00-20:00	28/01/25	נימר	Introduction to APIs
20	ה	16:00-20:00	30/01/25	נימר	Midterm Project
21	א	16:00-20:00	02/02/25	נימר	Backend with Node.js using Python
22	ג	16:00-20:00	04/02/25	נימר	Backend with Node.js using Python
23	ה	16:00-20:00	06/02/25	נימר	Version Control with Git and GitHub
24	א	16:00-20:00	09/02/25	נימר	Advanced Development-AI Integration
25	ג	16:00-20:00	11/02/25	נימר	Advanced Development-AI Integration
26	ה	16:00-20:00	13/02/25	נימר	Advanced Development-AI Integration
27	א	16:00-20:00	16/02/25	נימר	Advanced Development-AI Integration
28	ג	16:00-20:00	18/02/25	נימר	MongoDB Integration
29	ה	16:00-20:00	20/02/25	נימר	MongoDB Integration
30	א	16:00-20:00	23/02/25	נימר	Final Project
31	ג	16:00-20:00	25/02/25	נימר	Soft Skills + Final Project
32	ה	16:00-20:00	27/02/25	נימר	Soft Skills + Final Project
33	א	16:00-20:00	02/03/25	צופן	Soft Skills