COLUMBIA UNIVERSITY
School of Professional Studies

3-Week Summer Immersion | Building *Web Applications with Python*

LEVEL: Beginner / Intermediate
SESSION: Session 1 & 2
DAYS & TIME: Monday - Friday, 11:10 a.m. - 1:00 p.m. and 3:10 - 5:00 p.m.
TEACHER: Siddharth Singh

REQUIREMENTS:

- MacBook or Laptop with Text Editor like Notepad ++ and Google Chrome
- Python IDE
- MYSQL / SQLite3 shell and interactive cloud-based SQL environment for DDL and DML examples

Day	Lesson	Outcomes	Teaching & Learning Activities
Session1	Basic HTML and CSS	A1-A3	Demo and lab on elements, attributes and inline styling
Session2	Next- level HTML & CSS	A1-A3	Demo and lab on internal and external styling, classes, IDs and selectors, box model, positioning, media queries and APIs
Session3	Python Server Setup and Site Migration	A5	Design lab (HTML5 and parallax scrolling) followed by Python web app setup and site migration to the server
Session4	Web App: Templates	A5	Design lab (wrap-up) followed by site migration to template files (.tpl), static directory setup and file uploads
Session5	Python Basics I	A4	Demo and lab on IDE (shell vs compiler), data types, type conversion, built-in functions, concatenation, user input, formatting and operators
Session6	Next-level Python	A4	Demo and lab on module imports, user-defined functions and parameters
Session7	Python Exercises	A4	Python labs; finding max and min number
Session8	JavaScript Basics	A4-A5	Demo on JavaScript (inline, internal and external), syntax, display, changing, innerHTML, changing styles and elements
Session9	Next-level JS	A4-A5	Demo on events and lab on 99 bottles of root beer on the wall problem
Session10	SQL Theory and DB Setup	A6 - A7	Demo and lab on normalizing databases (1NF-3NF), SQL DML and DDL examples and exercises and SQLite DB creation
Session11	Web App: Parameters	A4-A5	Demo and lab on user sign-in and sign-up form creation, POST vs GET and passing parameters through templates
Session12	Web App: Databases	A4-A5	Demo and lab on user sign-in and sign-up with database functionality
Session13	Web App: Sessions & Wrap up	A4-A5	Demo and lab on cookies, creating and managing sessions and redirections, MailGun setup and/or introductions to other APIs to allow for further study after the course

LEARNING OBJECTIVES:

A1. Use core front-end web coding languages to add dynamic content, animation and effects to web apps
A2. Create UI/UX artifacts needed to create interactive prototypes, including the use of APIs
A3. Display ability to adapt to changing mobile app trends and show a solid understanding of best practices
A4. Use core back-end coding languages to add back-end functionality to mobile apps
A5. Use a web application framework or micro-framework to manage back-end functionality
A6. Understand database planning, including normalization techniques
A7. Use DML and DDL to store, retrieve and secure user data in a database