

Python Web Development Syllabus

Total Duration: 120 Hours

Delivery Mode: Classroom / Online / Lab-based

Methodology: Lecture + Hands-on + Mini Projects

Module 1: Python Essentials (15 Hours)

- Python Basics: Variables, Data Types, Operators
- Control Structures: if, loops
- Functions & Modules
- Lists, Tuples, Dictionaries, Sets
- File I/O
- Object-Oriented Programming Basics
- Exception Handling
- Hands-on: CLI Calculator, File Reader

Module 2: Web Basics (HTML, CSS, JS) (10 Hours)

- HTML5: Elements, Forms
- CSS3: Selectors, Flexbox
- JavaScript Basics: DOM, Events
- Responsive Design with Bootstrap
- Hands-on: Simple website page with forms and styling

Module 3: Flask Web Framework (20 Hours)

- Flask Installation & Project Setup
- Routing & Views
- HTML Templating with Jinja2
- Handling Forms and POST Requests
- Static Files (CSS/JS)

- Flask Debug Toolbar
- Hands-on: Build a Personal Diary Web App

Module 4: Database with Flask (10 Hours)

- Intro to Databases (SQLite)
- CRUD Operations with SQLAlchemy
- Flask-SQLAlchemy ORM
- Migrations with Flask-Migrate
- Hands-on: Notes App with Add/Edit/Delete

Module 5: User Authentication (10 Hours)

- Sessions & Cookies
- Flask-Login for Authentication
- User Registration & Login Flow
- Password Hashing
- Hands-on: User login/logout system

Module 6: REST APIs with Flask (10 Hours)

- REST Principles
- Flask-RESTful Basics
- CRUD APIs with Flask
- Consuming APIs with Postman
- Hands-on: Todo REST API with JSON

Module 7: Django Framework Overview (15 Hours)

- Django Project Setup
- Models, Views, Templates
- Admin Panel
- Routing and URLs
- CRUD with Django ORM
- Hands-on: Simple Blog with Admin Backend

Module 8: Frontend Integration & AJAX (10 Hours)

- Using Fetch/AJAX for Dynamic UI
- JSON API Communication
- Frontend Update without Refresh
- Hands-on: Voting App or Dynamic Form Submit

Module 9: Deployment & Version Control (10 Hours)

- Git & GitHub Workflow
- Hosting Flask App on PythonAnywhere or Render
- Basics of Docker (optional)
- Using Environment Variables
- Hands-on: Deploy Flask or Django App

Module 10: Final Mini Project + Review (10 Hours)

- Project Ideas (Pick One):
 - - Blog System
 - - Notes Manager with Login
 - - E-commerce Frontend + Backend
 - - Portfolio Website with Admin

Tools Used

- IDE: VS Code
- Browser: Chrome
- Flask, Django, SQLite
- Postman, GitHub

Suggested Weekly Schedule (for 6 Days/Week Plan):

Week	Modules Covered	Hours
Week 1	Module 1, 2	20 Hours

Week 2	Module 3	20 Hours
Week 3	Module 4, 5	20 Hours
Week 4	Module 6, 7	20 Hours
Week 5	Module 8, 9	20 Hours
Week 6	Module 10 + Project Review + Q&A	20 Hours