



# Python with Django

***"TURN IDEAS INTO SCALABLE WEB SOLUTIONS  
WITH PYTHON & DJANGO"***

**SYLLABUS**

Version: 1.0

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- ✦ Established in 2013, Apponix has trained over 50,000 students across India and abroad, helping them build successful careers in the tech industry.
- ✦ With centers in Bangalore, Pune, Mumbai, Hubli, Aurangabad, Tumkur, Trichy, Gwalior, Ranchi, and more, Apponix continues to expand rapidly across the country.
- ✦ All our courses are designed to be job-oriented, practical, and aligned with real-world industry requirements.
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# PYTHON WITH DJANGO

## SECTION - 1

### 1. Overview

- Why do we need Python?
- Program structure

### 2. Environment Setup

- Python Installation
- Execution Types
- What is an interpreter?
- Interpreters vs Compilers
- Using the Python Interpreter
- Interactive Mode
- Running Python files
- Working with Python shell
- Integrated Development Environments (IDEs)
- Interactive Mode Programming
- Script Mode Programming

### 3. Basic Concepts (Operators)

- Basic Operators
- Types of Operator
- Python Arithmetic Operators
- Python Comparison Operators
- Python Assignment Operators
- Python Bitwise Operators
- Python Logical Operators
- Python Membership Operators (in, not in)
- Python Identity Operators (is, is not)
- Python Operators Precedence

## 4. Basic Concepts (Data Types & Collections)

### Data Types

- Variables
- Assigning Values to Variables
- Multiple Assignment
- Python Numbers

### Python Strings

- Accessing Values in Strings
- String Special Operators
- String Formatting Operator
- Triple Quotes
- Built-in String Operations

### Python Lists

- Accessing, Updating, Deleting List Elements
- Basic List Operations
- Indexing, Slicing, Matrixes
- Built-in List Functions & Methods

### Python Tuples

- Accessing Values in Tuples
- Updating Tuples
- Deleting Tuple Elements
- No Enclosing Delimiters
- Indexing, Slicing, Matrixes
- Built-in Tuple Functions

### Python Dictionary

- Accessing values in Dictionary
- Updating Dictionary
- Deleting Dictionary Elements
- Properties of Dictionary Keys
- Built-in Dictionary Functions & Methods

## 5. Basic Operators (Repeated for Reinforcement)

- Types of Operator
- Python Arithmetic Operators
- Python Comparison Operators
- Python Assignment Operators
- Python Bitwise Operators
- Python Logical Operators
- Python Membership Operators (in, not in)
- Python Identity Operators (is, is not)
- Python Operators Precedence

## 6. Loops and Decision Making

- if statement
- else statement
- nested if statements
- while loop
- for loop
- nested loops

### **Loop Control Statements**

- break statement
- continue statement
- pass statement

## SECTION - 2

### 1. Functions

- Defining a Function
- Syntax
- Calling a Function
- Pass by Reference vs Value
- Function Arguments
- Required Arguments
- Keyword Arguments
- Default Arguments
- Variable-length Arguments
- The return Statement
- Scope of Variables
- Global vs Local Variables

## 2. Python Modules and Packages

- Framework vs Packages
- Folium Introduction
- Why are modules used?
- Creating modules
- The import Statement
- The from...import Statement
- The from...import \* Statement
- Locating Modules
- The PYTHONPATH Variable
- Namespaces and Scoping
- The dir() Function
- The globals() and locals() Functions
- The reload() Function
- Packages in Python

## 3. Basic OOPs Concept

- Creating Classes in Python
- Documented String
- Private Identifier
- Constructor
- Inheritance
- Polymorphism

## 4. Decorator, Iterator, and Generator

## 5. Anonymous Function

- Lambda
- Map
- Filter
- Reduce

## SECTION - 3

### 1. File Manipulation

- Opening Text File
- Working with a File on Python
- The open function
- File modes
- The file object attributes
- close() method
- write() method
- read() method
- Files: Input
- Files: Output
- Reading files
- Renaming & deleting files
- Writing into a file
- remove() method

### 2. Python GUI

- Basic Operations using Tkinter
- Buttons and Textbox
- Menu Bar
- Message Box and Radio Button
- Checkbox and Event Creating
- Creating Application in GUI

### 3. SQL and Python

- SQLite Overview
- Integrating Python with SQLite

### 4. NoSQL and Python

- Overview of NoSQL
- Integration with NoSQL

### 5. Project Demonstration

- Tkinter with SQL

## 6. Other Concepts

- Errors and Exception Handling
- Standard Exceptions
- Assertions in Python
- What is Exception?
- Handling an Exception
- Syntax
- The except Clause with No Exceptions
- The except Clause with Multiple Exceptions
- The try-finally clause
- Argument of an Exception
- Example with Tkinter Application
- Regular Expressions
- Powerful Utilities
- Multithreading
- List Comprehension
- Shallow and Deep Copy
- Unit Testing

## 7. Advanced Concepts – Overviews

- Networking Basics
- Sending/Receiving Emails via Python
- Basics of Pandas and NumPy
- How to use Anaconda
- How to Create Dashboards
- Django Overview

# DJANGO'S SECTION - I

## 1. Introduction to Django

- What Is a Web Framework?
- The MVC Design Pattern
- Django's History

## 2. Installation of Django

- Installing Python
- Installing Django
- Setting Up a Database
- Starting a Project
- The Development Server
- Django Commands Overview

## 3. The Basics of Dynamic Web Pages

- Your First View: Dynamic Content
- Mapping URLs to Views
- How Django Processes a Request
- URL configurations and Loose Coupling
- 404 Errors
- Your Second View: Dynamic URLs
- A Word About Pretty URLs
- Wildcard URL patterns
- Django's Pretty Error Pages

## 4. The Django Template System

- Template System Basics
- Using the Template System
- Creating Template Objects
- Rendering a Template
- Multiple Contexts, Same Template
- Context Variable Lookup
- Playing with Context Objects
- Basic Template Tags and Filters Tags
- Philosophies and Limitations
- Using Templates in Views
- Template Loading
- `render_to_response()`
- The `locals()` Trick
- Subdirectories in `get_template()`
- The `include` Template Tag
- Template Inheritance

## 5. Interacting with a Database: Models

- The “Dumb” Way to Do Database Queries in Views
- The MTV Development Pattern
- Configuring the Database
- Your First App
- Defining Models in Python
- Your First Model
- Installing the Model
- Basic Data Access
- Adding Model String Representations
- Inserting and Updating Data
- Selecting Objects
- Filtering Data
- Retrieving Single Objects
- Ordering Data
- Chaining Lookups
- Slicing Data
- Deleting Objects
- Making Changes to a Database Schema
- Adding Fields
- Removing Fields
- Removing Many to Many Fields
- Removing Models

## 6. The Django Administration Site

- Activating the Admin Interface
- Using the Admin Interface
- Users, Groups and Permissions
- Customizing the Admin Interface
- Customizing the Admin Interface's Look and Feel
- Customizing the Admin Index Page
- When and Why to Use the Admin Interface

## SECTION-2

## 7. Form Processing

- Search
- The "Perfect Form"
- Creating a Feedback Form
- Processing the Submission
- Custom Validation Rules
- A Custom Look and Feel
- Creating Forms from Models

## 8. Advanced Views and URL Configurations

- URL configuration Tricks
- Streamlining Function Imports
- Using Multiple View Prefixes
- Special-Casing URLs in Debug Mode
- Using Named Groups
- Understanding the Matching/Grouping Algorithm
- Passing Extra Options to View Functions
- Using Default View Arguments
- Special-Casing Views
- Capturing Text in URLs
- Determining What the URL configuration Searches Against
- Including Other URL configurations
- How Captured Parameters Work with include()
- How Extra URL configurations Options Work with include()

## 9. Generic Views

- Using Generic Views
- Generic Views of Objects
- Extending Generic Views
- Making "Friendly" Template Contexts
- Adding Extra Context
- Viewing Subsets of Objects
- Complex Filtering with Wrapper Functions
- Performing Extra Work

## 10. Extending the Template Engine

- Template Language Review
- Request Context and Context Processors
- `django.core.context_processors.auth`
- `django.core.context_processors.debug`
- `django.core.context_processors.i18n`
- `django.core.context_processors.request`
- Guidelines for Writing Your Own Context Processors
- Inside Template Loading
- Extending the Template System
- Creating a Template Library
- Writing Custom Template Filters
- Writing Custom Template Tags
- Shortcut for Simple Tags
- Inclusion Tags
- Writing Custom Template Loaders
- Using the Built-in Template Reference
- Configuring the Template System in Standalone Mode

## 11. Generating Non-HTML Content

- The Basics: Views and MIME Types
- Producing CSV
- Generating PDFs
- Installing Report Lab
- Writing Your View
- Complex PDFs
- Other Possibilities
- The Syndication Feed Framework
- Initialization
- A Simple Feed
- A More Complex Feed
- Specifying the Type of Feed
- Enclosures
- Language
- URLs
- Publishing Atom and RSS Feeds in Tandem
- The Sitemap Framework
- Installation
- Initialization
- Sitemap Classes
- Shortcuts
- Creating a Sitemap Index
- Pinging Google

## 12. Sessions, Users and Registration

- Cookies
- Getting and Setting Cookies
- The Mixed Blessing of Cookies
- Django's Session Framework
- Enabling Sessions
- Using Sessions in Views
- Setting Test Cookies
- Using Sessions Outside of Views
- When Sessions Are Saved
- Browser-Length Sessions vs Persistent Sessions
- Other Session Settings
- Users and Authentication
- Enabling Authentication Support
- Using Users
- Logging In and Out
- Limiting Access to Logged-in Users
- Limiting Access to Users Who Pass a Test
- Managing Users, Permissions and Groups
- Using Authentication Data in Templates
- The Other Bits: Permissions, Groups, Messages and Profiles
- Permissions
- Groups
- Messages
- Profiles

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**Head Office - Bangalore**

306, 10th Main, 46th Cross, 4th Block  
Rajajinagar, Bangalore - 560010



info@aponix.com



8050580888

**Branches:**

Hubli, Pune, Gwalior, Tumkur,  
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