

# Python With Django



# About Course

Django is a free and open-source, Python-based web framework that follows the model–template–views (MTV) architectural pattern. It is maintained by the Django Software Foundation (DSF), an independent organization established in the US as a 501(c)(3) non-profit.

Django is a high-level Python web framework that enables rapid development of secure and maintainable websites.

Built by experienced developers, Django takes care of much of the hassle of web development, so you can focus on writing your app without needing to reinvent the wheel.

# **PYTHON WITH DJANGO**

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## **CURRICULUM**

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### **1 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**

### **2 Basic Operators in Python**

**Types of Operator**

**Python Arithmetic Operators**

**Python Comparison Operators**

**Python Assignment Operators**

**Python Bitwise Operators**

**Python Logical Operators**

## Basic Concepts

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 Values in Lists

Updating Lists

Delete List Elements

Basic List Operations

Indexing, Slicing, and Matrixes

Built-in List Functions & Methods

Python Tuples

Accessing Values in Tuples

Updating Tuples

Delete Tuple Elements

Basic Tuples Operations

Indexing, Slicing, and Matrixes

- No Enclosing Delimiters
- Built-in Tuple Functions
- Python Dictionary
- Accessing Values in Dictionary
- Updating Dictionary
- Delete Dictionary Elements
- Properties of Dictionary Keys
- Built-in Dictionary Functions & Methods

## ④ Loops and Decision Making

- if statements
- ..else statements
- nested if statements
- while loop
- for loop
- nested loops
- Loop Control Statements
- 1) break statement
- 2) continue statement
- 3) pass statemen

## ⑤ 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

## ⑥ Global vs. Local variables

### Built-in module and functions

Os module  
mkdir()  
chdir()  
getcwd()  
rmdir()  
listdir()

### Math module and functions

Constants  
Trigonometry  
Logarithmic  
Representation

## Random module and functions

`random()`

`randint()`

`randrange()`

`choice ()`

`shuffle ()`

## 7 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

Constructing user defined packag

## 8 Basic OOPs Concept

Creating class in Python

Private Identifier

Constructor

Inheritance

Polymorphism

## 9 Decorator, Iterator and Generator Anonymous Function

Lambda

Map

Filter

Reduce

## 10 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

## 11 Python GUI

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

## 12 SQL and Python

Overview of SQLite  
Integrating Python with SQLite

## 13 Project Demonstration Tkinter

Project Demonstration Tkinter

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## Other Concepts

Errors and Exception Handling

Standard exceptions

Assertions in Python

The assert Statement

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 Expression

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## Advanced Concept – Overviews

Basics of Pandas and Numpy

How to use Anaconda

How to create dashboard

Overview of Django



# Django Course Syllabus SECTION - I

1

## Introduction to Django

What Is a Web Framework?  
The MVC Design Pattern

2

## Installation of Django

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

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## 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

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## 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

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## 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**

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## **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 - II

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### 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

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### 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()**
- **Section II : Django Sub Framework**

## 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.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**

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## **Users and Registration**

- **Cookies**

- **Getting and Setting Cookies**

- **The Mixed Blessing of Cookies**

- **Setting Test Cookies**

- **Users and Authentication**

- **Enabling Authentication Support**

- **Using Users**

- **Logging In and Out**

- **Limiting Access to Logged-in Users**

- **Managing Users, Permissions and Groups**

- **Using Authentication Data in Templates**

- **Permissions**

- **Groups**

- **Messages**

- **Profiles**






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