

Programming Language on PYTHON & DJANGO Course Outline: (75-Hours)

1-An Introduction to Python

- A Brief History of Python Python Versions
- Installing Python
- Environment Variables
- Executing Python from the Command Line
- IDLE
- Editing Python Files
- Python Documentation
- Getting Help
- Dynamic Types
- Python Reserved Words
- Naming Conventions

2 - Basic Python Syntax

- Basic Syntax Comments
- String Values
- String Methods
- The format Method
- String Operators
- Numeric Data Types
- Conversion Functions
- Simple Input and Output The % Method
- The print Function

3 - Language Components

- Indenting Requirements
- The if Statement
- Relational Operators
- Logical Operators
- Bit Wise Operators
- The while Loop
- break and continue
- The for Loop

4 - Collections

- Lists
- Tuples Sets Dictionaries
- Sorting Dictionaries
- Copying Collections

5 - Functions

- Defining Your Own Functions
- Parameters
- Function Documentation
- Keyword and Optional
- Parameters
- Passing Collections to a Function
- Variable Number of Arguments Scope
- Functions - "First Class Citizens"
- Passing Functions to a Function
- Mapping Functions in a Dictionary
- Lambda
- Inner Functions
- Closures

6 - Modules

- Modules
- Standard Modules - sys
- Standard Modules - math
- Standard Modules - time
- The dir Function

7 - Exceptions

- Errors
- Run Time Errors
- The Exception Model
- Exception Hierarchy
- Handling Multiple Exceptions raise
- assert
- Writing Your Own Exception Classes

8 - Input and Output

- Data Streams
- Creating Your Own Data Streams
- Access Modes
- Writing Data to a File
- Reading Data From a File
- Additional File Methods
- Using Pipes as Data Streams
- Handling IO Exceptions
- Working with Directories Metadata
- The pickle Module

9 - Classes in Python

- Classes in Python
- Principles of Object Orientation
- Creating Classes
- Instance Methods
- File Organization
- Special Methods
- Class Variables
- Inheritance
- Polymorphism
- Type Identification

Django Course Syllabus

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
- 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

- Custom Exception Classes

10 - Regular Expressions

- Simple Character Matches
- Special Characters
- Character Classes
- Quantifiers
- The Dot Character
- Greedy Matches Grouping
- Matching at Beginning or End
- Match Objects

- 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

- 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 - II**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()
- 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

11. 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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