# Course Name: Practical Python Programing

Pre-requisites: *Basic Computer knowledge. Understanding of how computer works. Some hands-on programing knowledge will be very helpful.*

Length: *12 Weeks (60 hours).*

## Course Outline:

### Week 1: Python Language Basics

1. Why Python? The landscape. Of Application/System programing languages.
2. Setup the development environment.
3. “Hello World!” of Python.
4. Comments And Pound Characters.
5. Numbers And Math.
6. Variables And Names.
7. More Variables And Printing.
8. Strings And Text
9. More Printing
10. What Was That?

### Week 2: Python Programing - Interactive and I/O

1. Asking Questions.
2. Prompting People.
3. Parameters, Unpacking, Variables.
4. Prompting And Passing.
5. Reading Files.
6. Reading And Writing Files.
7. More Files.
8. Names, Variables, Code, Functions.
9. Functions And Variables.
10. Functions And Files.
11. Functions Can Return Something.
12. Take home test.

### Week 3: Python Programing – Logic, List and more

1. Memorizing Logic
2. Boolean Practice
3. What If
4. Else And If
5. Making Decisions
6. Loops And Lists
7. While Loops
8. Accessing Elements Of Lists
9. Branches and Functions
10. Designing and Debugging
11. Symbol Review
12. Doing Things To Lists
13. Dictionaries, Oh Lovely Dictionaries

### Week 4: Python Programing – Modules, Classes and Objects

1. Modules, Classes, And Objects.
2. Learning To Speak Object Oriented.
3. Is-A, Has-A, Objects, and Classes.
4. Inheritance Vs. Composition.
5. A Project Skeleton.
6. Automated Testing.
7. Advanced User Input.
8. A Practical Example.
9. Another Practical Example.

### Week 5: House Keeping Work and Django Framework

1. Python 3 vs. Python 2.7.
2. Common Python Library and Package Management.
3. Introduction to PyCharm Python Development Tools.
4. Web Development Introduction.
5. Introduction to Python based Web Development Framework.
6. Introd.uction to Django.
7. What we want to accomplish om the next 4 weeks?
8. Installation libraries for the project.
9. Virtual Environment
10. Django Basics
    1. Creating your Django Project
    2. Creating a Django Application
    3. Creating a View
    4. Mapping URLs
    5. Basic Workflows
       1. Creating a new Django Project
       2. Creating a new Django application

### Week 6: Adding Visual to the Site and Presenting the Data

1. Templates and Static Media
   1. Using Templates
      1. Configuring the Templates Directory
      2. Dynamic Paths
      3. Adding a Template
   2. Serving Static Media

1. Configuring the Static Media Directory

* 1. Static Media Files and Templates
  2. The Static Media Server
  3. Basic Workflow

1. Models and Databases
   1. Project Requirements in detail
   2. Telling Django About Your Database
   3. Creating Models
   4. Creating and Migrating the Database
      1. Setup Database and Create Superuser
      2. Creating / Updating Models / Tables
   5. Django Models and the Django Shell
   6. Configuring the Admin Interface
   7. Creating a Population Script
   8. Basic Workflows
      1. Setting up your Database
      2. Adding a Model

### Week 7: Connecting the Data to Website

1. Models, Templates and Views
   1. Basic Workflow: Data Driven Pages
   2. Showing Categories on Rango’s Homepage
      1. Importing Required Models
      2. Modifying the Index View
      3. Modifying the Index Template
   3. Creating a Details Page
      1. URL Design and Mapping
      2. Update Category Table with Slug Field
      3. Category Page Workflow
      4. Category View
      5. Category Template
      6. Parameterised URL Mapping
      7. Modifying the Index Template
      8. Demo.
2. Fun with Forms
   1. Basic Workflow
   2. Page and Category Forms
      1. Creating ModelForm Classes
      2. Creating an Add Category View
      3. Creating the Add Category Template
      4. Mapping the Add Category View
      5. Modifying the Index Page View
      6. Demo
      7. Cleaner Forms

### Week 8: Users and Templates

1. User Authentication
   1. Setting up Authentication
   2. The User Model
   3. Additional User Attributes
   4. Creating a User Registration View and Template
      1. Creating the UserForm and UserProfileForm
      2. Creating the register() View
      3. Creating the Registration Template
      4. The register() View URL Mapping
      5. Linking Together
      6. Demo
   5. Adding Login Functionality
      1. Creating the login() View
      2. Creating a Login Template
      3. Mapping the Login View to a URL
      4. Linking Together
      5. Demo
   6. Restricting Access
      1. Restricting Access with a Decorator
   7. Logging Out
2. Working with Templates
   1. Reoccurring HTML and The Base Template
   2. Template Blocks
      1. Abstracting Further
   3. Template Inheritance
   4. Referring to URLs in Templates
   5. Exercises

### Week 9: Sessions and More Users

1. Cookies and Sessions
   1. Cookies, Cookies Everywhere!
   2. Sessions and the Stateless Protocol
   3. Setting up Sessions in Django
   4. A Cookie Tasting Session
      1. Testing Cookie Functionality
   5. Client Side Cookies: A Site Counter Example
   6. Session Data
   7. Browser-Length and Persistent Sessions
   8. Clearing the Sessions Database
   9. Basic Considerations and Workflow
2. User Authentication with Django-Registration-Redux
   1. Setting up Django Registration Redux
   2. Functionality and URL mapping
   3. Setting up the Templates
      1. Login Template
      2. Registration Template
      3. Registration Complete Template
      4. Logout Template
      5. Try out the Registration Process
      6. Refactoring your project
      7. Modifying the Registration Flow

### Week 10: Make the Site Pretty

1. Bootstrapping the Site
   1. The New Base Template
   2. Quick Style Change
      1. The Index Page
   3. The Login Page
      1. Other Form-based Templates
   4. The Registration Template
   5. Using Django-Bootstrap-Toolkit
   6. The End Result
2. Template Tags
   1. Providing Categories on Every Page
   2. Using Template Tags
   3. Parameterised Template Tags

### Week 11: Adding the Internet Search to site and More

1. Adding External Search Functionality
   1. The Bing Search API
      1. Registering for a Bing API Key
   2. Adding Search Functionality
   3. Storing your API KEY safely
   4. Exercises
   5. Putting Search into the Site
      1. Adding a Search Template
      2. Adding the View
2. Site Exercises
   1. Track Page Click Throughs
      1. Hint
   2. Searching Within a Category Page
   3. Create and View Profiles
3. JQuery and Django
4. Including JQuery in your Django Project/Application
5. Stylistic Note
6. Example Popup Box on Click
7. Selectors
8. DOM Manipulation Example
9. AJAX in Django with JQuery
   1. AJAX based Functionality
   2. Add a “Like Button”
      1. Workflow
      2. Updating Category Template
      3. Create a Like Category View
      4. Making the AJAX request
   3. Adding Inline Category Suggestions
      1. Workflow
      2. Parameterise the Get Category List Function
      3. Create a Suggest Category View
      4. Map View to URL
      5. Update Base Template
      6. Add AJAX to Request Suggestions

### Week 12: Testing and Deployment

1. Automated Testing
   1. Running Tests
   2. Testing the models in Rango
   3. Testing Views
   4. Testing the Rendered Page
   5. Coverage Testing
   6. Exercises
2. Deploying Your Project
   1. Creating a PythonAnywhere Account
   2. The PythonAnywhere Web Interface
   3. Setting up your Web Application
      1. Configuring the WSGI Script and its virtual environment
      2. Assigning Static Paths
      3. Bing API Key
      4. Turning off DEBUG Mode
   4. Log Files
3. Q&As