**Python Modules**

**Module-1 Python Basics and Foundation**

1. Python Introduction, Features of Python, Pros and cons, Reason to learn Python
2. Python history,
3. Python2 vs. Python3
4. Introduction of IDLE and text editor.
5. Installation of Visual Studio code.
6. Installation of PyCharm

**Module-2 Python Installation and Basic programs**

1. Python Installation on windows
2. Write first python program
3. Start programming on python shell
4. Comments, Indentation and Statements in Python

# Identifiers in Python

# Declaring values in python

# Module-3 Introduction of Data types in Python

1. Object identity
2. Introduction of variables and keywords in Python
3. Python Random number
4. Taking input from user
5. Multiple Assignment
6. Variable and data types
7. Python Variable Naming rules
8. Variable Scope in Python.

**1. Home Project Assignments**

1. Write a simple python program to add 3 numbers
2. WAP to concatenate a number and a string
3. WAP to find the area of a circle having radius 5cm
4. WAP to calculate simple interest if principle is 2000, rate of interest 10% for 5 years.
5. WAP to add two numbers by taking the input from users.
6. Print 10 random numbers.
7. WAP to add and multiply two random numbers.
8. WAP to add integer number and float.
9. WAP to find factorial of 10 using math module.

**Module-4Python Core Objects and built-in Function:**

1. Python Data types -int, Float, Complex,
2. Introduction of Binary, Octal and Hexadecimal numbers.
3. Number conversion function In Python
4. Math Module in Python

**Module-5 Introduction to Python Data structure**

1. What are Python Data Structures
2. Python Strings and its operations
3. List in Python and its operations
4. Tuple in Python and its operations
5. Set in Python and its operations
6. Dictionary in python and its operations
7. List Comprehension

**2.Home Project Assignments**

1. WAP to convert an integer number into binary, octal and hexa decimal numbers
2. WAP to calculate the factorial of 10,50,100,150 using math module
3. Take some examples of sets, tuple, list and dictionary and apply for loop
4. WAP to convert a tuple into list
5. WAP to convert a set into list
6. WAP to convert a list into tuple
7. WAP to filter the even numbers from given list [2,23,4,3,56,4,2.4,5,2,3,5.56]
8. Take the List [10,23,13,4,4,5,44,55,45] and double all the elements of this list
9. WAP to add all the elements of a list using reduce function

**Module-6 Conditional Statements in python**

1. What are conditional statements
2. What are if-else statements
3. What are if-elif-else statements in python?
4. How to use indentation for defining if, else, elif block
5. Control statements in python

**Module-7 Introduction to Python Loops**

1. What are loops?
2. Introduction of while and for loops
3. Control Statements in loops
4. for-else loop
5. How to iterate through the various objects?
6. Sequence and iterable objects

**3. Home Project Assignments**

1. Make a Program using loop
2. WAP by taking two numbers and print greater one of them
3. WAP to print a day of week, if the day is equal to Sunday
4. WAP to print the numbers up to 11
5. WAP by taking the string “digitizebrand” and slice it
6. WAP using for loop and print ‘hello python

**Module-8Introduction of Functions in Python**

1. Python Functions
2. Types of Functions
3. Rules for naming Python functions
4. Parameterized and non-parameterized functions
5. Defining and calling the Python functions
6. Python return statement
7. Variable scope in python function- Local and global Scope
8. Deleting function
9. Python Build-In Function

**Module-9 Introduction of Anonymous and Higher order functions**

1. Python Anonymous Lambda function
2. Range Function in Python
3. What is map function?
4. What is filter function?
5. What is reduce function?
6. How to use filter, map and reduce function with lambda function?

**4. Home Assignments**

1. WAP to print the value of this equation y=6x**2**+3x+2, for x=2

2. WAP to find the area of a circle using function with radius 5cm

3. WAP for swapping

4. Insert 10 elements in empty list

5. WAP to update the elements of a tuple

6. WAP to store a string “digital” in a list and update this string by any value

**Module-10 File Handling in Python**

1. File Handling in Python
2. Python sending email
3. File pointer position, modifying file pointer position

**Module-11 Introduction to CSV files**

* 1. Read csv file
  2. Write csv file
  3. Creating a file

**Module-12 Working with python directories and learn how to create directories**

* 1. Creating new directory,
  2. Directories methods
  3. The getcwd() method
  4. Changing The current working directory
  5. Deleting directory

**5. Home Assignments**

1. WAP to create a file and store the output in that file

2. Create build-in Modules

3. WAP to create a file and store the csv values

**Module-13 Advance Python**

1. What is object oriented programming in python?
2. What is inheritance and types of inheritance in python?
3. Method overloading and method overriding in python
4. Modules and packages in python
5. Formatting in python
6. The pip command
7. Introduction of os ,sys, datetime and time Modules

**Module-14 Exception handling and regular expression in python**

1. Exception handling in Python
2. Assert statement for debugging
3. What are regular expressions
4. The match and search function
5. Matching vs. searching

**Module-15 Database interaction in python**

1. How to download MySql
2. Installation and introduction of MySql database
3. How to create connection between MySql and Python
4. How to perform CRUD operation using MySql and Python?
5. Disconnecting database

**6. Home Project Assignments**

1. WAP to get the current time of any country

2. WAP of inheritance

3 Make some Programs on types of Inheritance

4. WAP of exception handling

**HTML5, CSS3, Bootstrap Modules**

**Modules-16 Using HTML5,CSS3,Bootstrap**

* Working with Bootstrap templates
* Integration of Bootstrap in Django Templates
* Customizing Bootstrap Templates

**7. Home Assignments**

1. Download a bootstrap template and customize it
2. Apply CSS/JS classes in Bootstrap templates

**Django Modules**

**Module-17 Introduction of framework**

1. What is Framework and web Framework?
2. Introduction to Django framework
3. Django Requirements
4. How to install Django and how to create Project in Django?
5. Django project directory structure

**Module-18 Creating Django Projects**

1. Creating first Django project
2. Explanation of Django directory structure
3. How to run Django server?
4. Introduction to Django Application
5. What is python application in Django and how to create application
6. Application directory structure
7. What is MVC and MVT?
8. What are views in Django?
9. Running our first app in Django
10. URL pattern in project level

**8. Home Project Assignments**

1. Create a Django project and run.
2. Create Django project and a Application
3. Creating a Django project and three Applications.

**Module-19 Displaying Hyperlinks Projects**

1. How to create multiple applications in Django and how to activate them?
2. URL pattern for multiple applications in Django
3. What is template(html templates, Bootstrap) in Django and rendering templates files?
4. Creating and rendering template files
5. Django template language(DTL)
6. Django comments filters
7. Creating template inside Application
8. Template inheritance
9. Extend tag in template inheritance

**Module-20 Introduction to Django Models**

1. What are Django Models?
2. What are Query set in Django?
3. Show Model Data to user
4. Django Admin Panel
5. Creating CRUD operation using Admin
6. How to create Super user and what are responsibilities of super user?

**9. Home Project Assignments**

1. Create Django Project and application then apply Bootstrap Classes.
2. Create a Django Model with fields “Email”, “First\_name”, “Last\_name” and “Address”.
3. Create two Django Models and connect with each Other.
4. Create Django Model and Perform CRUD in Admin Panel.

**Module-21 Introduction to Django Forms and Model Form**

1. What are Django Forms
2. Form Field Arguments and Widgets
3. Django Form With POST and CSRF
4. What is GET and POST Method
5. Get Form Data
6. Django Form Validation
7. Form errors
8. Django Model Form
9. Django Email Functionality

**10. Home Project Assignments**

1. Create a simple Log-in Form.
2. Create a Log-In form save the credentials in Admin panel
3. Create ModelForm API and save data in Admin panel.

**Modules-22 Session, cookies, signals, Middleware in Django**

1. What is session and cookies in Django
2. Difference between cookies and session
3. Creating session and cookies in Django
4. Using CRUD Operation in Django
5. Django Signals
6. Middleware in Django

**Module-23 Views in Django**

1. Class based views in Django,
2. Generic class based views in Django
3. Django Authentication views, Auth settings
4. Configuring database setting in Django
5. Pagination in Django
6. Pagination using class based
7. Pagination using function based

**11. Home Project Assignments**

1. Show the Model’s data to user using Class based views.

2. Show Model’s data using Pagination.

**Module-24 Introduction to Django rest framework**

1. What is API and web API
2. Introduction of Django rest framework
3. How to install DRF
4. Introduction of Django Rest Framework
5. Serializer and ModelSerializer in DRF
6. Class based API view in DRF
7. Generic API View in Mixins in DRF
8. Concrete View class in DRF
9. View set and model view set in Django

**Module-25 Authentication and permission classes in Django Rest Framework**

1. Session Authentication in Django
2. Basic authentication in Django
3. Introduction in permission in DRF
4. Allow any permission class
5. Is authenticated permission class
6. Is admin user permission class
7. Is authenticated or read only permission class

**Module-26 Throttling, filtering,ordering and pagination in DRF**

1. Anon Rate throttle in DRF
2. User rate throttle
3. Filtering and Django filters in DRF
4. Search filter, Ordering filter in DRF
5. Page number pagination
6. Limit Offset pagination

**Module-27 Serializer relationships in DRF**

1. Relationship in serializer
2. What is Nested serializer in DRF?
3. What is Hyperlinked Model Serializer in DRF?

**10. Home Project Assignments**

1. Create a Model and show data in browser.

2. Create two models and show the data in browser.

3. Create a model and perform CRUD operation using Browsable API.

**End to End Project**

* 1. Login System for any business in Django
  2. Django Chat Application
  3. Django Hospital Management System
  4. Railway Enquiry System
  5. **Django CMS(Content Management System)**