

Subject Code: 2ET4040503	Subject Title: Python for Data Science
Pre-Requisite	Basic knowledge of programming

Rationale:

- Easy to code: With the clear syntax developers get an idea on code identification instead of {};
- Simple Syntax: Python has a simple syntax similar to the English Language.

Course Objective:

- To provide students with contemporary knowledge in PYTHON PROGRAMMING.
- To equip students with skills to explore real-world software development challenges with python programming.

Teaching and Evaluation Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)			
Lecture	Tutorial	Practical	Credit	Theory		Practical	
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment
3	-	4	5	60	40	40	60

Course Contents:

Sr. No	Topic	Total Hours	Weight (%)
1	Introduction to Python: The basic elements of python, Data types, Operators, Control Structures, Strings and Input	4	10
2	Lists and Functions: Functions and scoping, List Operations, Recursion, Global variables, Modules, File I/O	4	10
3	Testing, Debugging, Exceptions and Assertions: Debugging, Handling Exceptions	5	12
4	Classes and Object-Oriented Programming: Abstract Data Types and Classes, Inheritance, Encapsulation and Information Hiding	6	12
5	Algorithms and Data structures: Search Algorithms, Sorting Algorithms	4	12
6	Python MySQL: Environment Setup, Creating new databases, Create Table	5	12
7	Python-Network Programming, Multithreaded Programming	4	12
8	Graphics and GUI Programming: Drawing using Turtle, Tkinter and Python	6	12
9	Security: Encryption and Decryption.	4	8

Course Outcome:

At the end of the course the student will be able:

1. To do testing and debugging of code written in Python.
2. To draw various kinds of plots using PyLab.
3. To create socket applications in Python.
4. To create GUI applications in Python.
5. Understand the fundamental of Python syntax and be Fluent in the use of Python control flow statements.
6. Express proficiency in the handling of strings, functions and lists.

List of References:

1. Introduction to Computation and Programming Using Python by John V Guttag (PHI)
2. Core Python Programming by R. Nageswara Rao, Dream tech
3. Core Python Programming Second Edition by Wesley J. Chun.(PHI)

E-Resource/Web Links:

- <https://www.python.org/>
- <https://docs.python.org/2/library/turtle.html>
- <https://nptel.ac.in/courses/117106113/34>

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may Change/formulate it as per his/her methodology and requirement.

1. Develop a Python Program to Add Two Numbers.
2. Develop a Python Program to find largest element in an array.
3. Develop a Python program to print even numbers in a list.
4. Develop a Python program to split and join a string.
5. Develop a program to Sort Python Dictionaries by Key or Value.
6. Develop a Python program to find the sum of all Items in the dictionary.
7. Develop a Python program to sort five integer values.

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	M												M			
CLO2	H													H		
CLO3	H						M							H		
CLO4	M					L								H		
CLO5	H	M		M			H							M		
CLO6	M	L		L								L		L		

H: High, M: Medium, L: Low