# 19CS12P1 - PYTHON AND DATA STRUCTURES LABORATORY

**(Common to CSE & IT)**

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| Course Category: | Core | Credits: | 1.5 |
| Course Type: | Practical | Lecture-Tutorial-Practical: | 0-0-3 |
| Prerequisite: | Fundamentals of Computers and basic Mathematics | Sessional Evaluation:Univ. Exam Evaluation:Total Marks: | 406010 |
| Objectives: | Students undergoing this course are expected:1. To learn and practice the basic fundamental blocks of Python Programming
2. To learn the basics of data structures and its implementation
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| Course Outcomes | Upon successful completion of the course, the students will be able to: |
| CO1 | gain knowledge on Python basics and implement various data structures. |
| Course Content | 1. Write a Python program for the following
	1. Compute the GCD of two numbers.
	2. Checking whether the given year is a leap year or not
2. Write a Python program for the following
	1. Finding Fibonacci series using recursion.
	2. Palindrome checking on strings and numbers.
3. Write a Python program to implement matrix multiplication.
4. Write a Python program to implementation of stack.
5. Write a Python program to implementation of queue.
6. Write a Python program to implementation of linked list.
7. Write a Python program to implementation of tree traversal technique.
8. Write a Python program to implementation on searching and sorting.
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| Text Books &ReferencesBooks | **TEXT BOOKS**1. Gowrishankar. S, Veena.A, “Introduction to Python Programming”, CRC Press, Taylor and Francis group, 2019.
2. Rance D. Necais, Data Structures and Algorithms Using Python, Fourth Edition, JONN-WILEY& SONS INC, 2011.

**REFERENCE BOOKS**1. SEYMOUR LIPCHUTZ, Data Structures with C, Tata McGraw Hill Education Private Limited,2010
2. Bradley N. Miller, David L. Ranum, Problem Solving with Algorithms and Data Structures Using Python SECOND EDITION.
3. Presis B R, Data structures and algorithms in Python.
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| E-Resources | 1. <https://Wiki.python.org/moin/WebProgrammingBooks>
2. <https://realpython.com/tutorials/web-dev/>
3. <https://nptel.ac.in/courses>
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