# INTRODUCTION TO PYTHON PROGRAMMING

| Course Code | 19CS2801D | Year | IV | Semester | II |
|---|---|---|---|---|---|
| Course Category | IDE - III | Branch | - | Course Type | Theory |
| Credits | 3 | L-T-P | 3-0-0 | Prerequisites | -- |
| Continuous Internal Evaluation : | 30 | Semester End Evaluation: | 70 | Total Marks: | 100 |

| Course Outcomes | | Blooms Taxonomy Level |
|---|---|---|
| Upon successful completion of the course, the student will be able to | | |
| CO1 | Understand the basic constructs of Python Programming. | L2 |
| CO2 | Apply Python Programming constructs to solve problems and make an effective report. | L3 |
| CO3 | Apply python packages to write programs for a given application. | L3 |
| CO4 | Analyze and choose appropriate data structure for solving problems | L4 |

**Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:Substantial, 2: Moderate, 1:Slight)**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | | | | | | | | | | | | | |
| CO2 | 3 | | | | | | | | 3 | 3 | | | | |
| CO3 | 3 | | | | | | | | | | | | | |
| CO4 | | 3 | | | | | | | | | | | | |
| Average* (Rounded to nearest integer) | 3 | 3 | | | | | | | 3 | 3 | | | | |

| Syllabus | | |
|---|---|---|
| Unit No | Contents | Mapped CO |
| I | **Introduction to Python** Features of Python, Writing and Executing First Python Program, Literal Constants, Variables and Identifiers, Reserved Words, Data Types, Input Operation, Operators and Expressions, Operations on Strings, Type Conversion, Conditional statements and iterative statements. | CO1,CO2 |
| II | **Functions in Python** Functions: Introduction, Built-in Math Functions, User Defined Functions: Function Call, Variable Scope and Lifetime, The return statement, Lambda Functions, Recursive functions Packages in python. | CO1,CO2 |

| III | **Strings and File Handling in Python** <br> **Strings:** Introduction, Built-in String Functions, Slice Operation, Comparing Strings, Iterating String, Regular Expressions. <br> **File Handling:** open, close, read and write operations. | CO1, CO2 |
|-----|-----|-----|
| IV | **Data Structures in Python Lists:** Accessing values in lists, Nested Lists, Basic List Operations. <br> **Tuples:** Creating Tuple, Accessing values in a tuple, Basic Tuple Operations. <br> **Dictionaries**: Creating and Accessing Dictionaries, Built-in Dictionary functions, List Vs Tuple Vs Dictionary. | CO1,CO4 |
| V | **Packages:** Numpy -- Create, reshape, slicing, operations such as min, max, sum, search, sort, math functions etc. Pandas -- Read/write from csv, excel, json files, add/ drop columns/rows, aggregations, applying functions Matplotlib -- Visualizing data with different plots, use of subplots. | CO1,CO3 |

| Learning Resources |
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| **Text books** |
| 1. Python Programming using Problem Solving Approach, Reema Thareja, 2017, OXFORD University Press |
| 2. Python for Data Analysis, Wes McKinney, 2012, O.Reilly. |
| **References** |
| 1. Core Python Programming, R. Nageswara Rao, 2018, Dreamtech press. |
| 2. Programming with python, T R Padmanabhan, 2017, Springer. |
| **e-Resources and other Digital Material** |
| 1. http://www.ict.ru.ac.za/Resources/cspw/thinkcspy3/thinkcspy3.pdf |
| **2.** https://zhanxw.com/blog/wp-content/uploads/2013/03/BeautifulCode_2.pdf |