# Introduction to Python Programming

## (Inter Disciplinary Elective -III)

| Offering Branches | CE,ME,EEE,ECE,IT | Course Code | 19CS2801D |
|---|---|---|---|
| Course Category: | IDE | Credits: | 3 |
| Course Type: | Theory | Lecture-Tutorial- Practical: | 3-0-0 |
| **Prerequisites:** | | Continuous Evaluation: | 30 |
| | | Semester End Evaluation: | 70 |
| | | Total Marks: | 100 |

| Course Outcomes | | |
|---|---|---|
| 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 | **L3** |
| **CO3** | Apply python packages to write programs for a given application. | **L3** |
| **CO4** | Analyze and choose appropriate data structure for solving problems | **L4** |

| Syllabus | | |
|---|---|---|
| **Course Content** | | |
| **UNIT-1** | **Introduction to Python** <br> 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** |
| **UNIT-2** | **Functions in Python** <br> 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** |

| UNIT-3 | **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** |
|--------|---|---|
| UNIT-4 | **Data Structures in Python**<br>**Lists:** Accessing values in lists, Nested Lists, Basic List Operations.<br>**Tuples:** Creating Tuple, Accessing values in a tuple, Basic TupleOperations.<br>**Dictionaries**: Creating and Accessing Dictionaries, Built-in Dictionary functions, List Vs Tuple Vs Dictionary. | **CO1,CO4** |
| UNIT-5 | **Packages:**<br>Numpy–Create, reshape, slicing, operations such as min, max, sum, search, sort, math functions etc.<br>Pandas -- Read/write from csv, excel, json files, add/ drop columns/rows, aggregations, applying functions<br>Matplotlib -- Visualizing data with different plots, use of subplots. | **CO1,CO3** |

**Learning Resources**

**Text books**

1. Python Programming using Problem Solving Approach, ReemaThareja, 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