## Python Programming

| Course Code | 20CS3352 | Year | II | Semester | I |
|---|---|---|---|---|---|
| **Course Category** | PCC Lab | **Branch** | CSE | **Course Type** | Practical |
| **Credits** | 1.5 | **L-T-P** | 0-0-3 | **Prerequisites** | Programming for Problem Solving |
| **Continuous Internal Evaluation :** | 15 | **Semester End Evaluation:** | 35 | **Total Marks:** | 50 |

| Course Outcomes | | |
|---|---|---|
| Upon successful completion of the course, the student will be able to | | |
| CO1 | Apply Python programming constructs for solving problems. | **L3** |
| CO2 | Conduct experiments as an individual, or team member by using Python programming. | **L3** |
| CO3 | Develop an effective report based on various programs implemented. | **L3** |
| CO4 | Apply technical knowledge for a given problem and express with an effective oral communication. | **L3** |
| CO5 | Analyze outputs generated through Python programming. | **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** | | | | | 2 | | | | 1 | | | | | |
| **CO3** | | | | | | | | | | 2 | | | | |
| **CO4** | 2 | | | | | | | | | 2 | | | | |
| **CO5** | | | 3 | | | | | | | | | | | |

| Syllabus | | |
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| Expt No | Contents | Mapped CO |
| 1. | Demonstrate the difference between interactive mode and IDEs | CO1,CO2,CO3,CO4,CO5 |
| 2. | Demonstrate programs using basic constructs of Python. | CO1,CO2,CO3,CO4,CO5 |
| 3. | Programs to demonstrate Programming constructs. | CO1,CO2,CO3,CO4,CO5 |
| 4. | Programs to demonstrate decision making and branching (Selection) | CO1,CO2,CO3,CO4,CO5 |
| 5. | Programs to demonstrate iterative statements. | CO1,CO2,CO3,CO4,CO5 |
| 6. | Build modular programs using functions. | CO1,CO2,CO3,CO4,CO5 |
| 7. | Programs to perform operations on strings, regular expressions with built – in functions. | CO1,CO2,CO3,CO4,CO5 |
| 8. | Implement programs using various data structures. | CO1,CO2,CO3,CO4,CO5 |
| 9. | Programs to demonstrate access specifiers. | CO1,CO2,CO3,CO4,CO5 |
| 10. | Programs to demonstrate types of Inheritance, polymorphism, | CO1,CO2,CO3,CO4,CO5 |
| 11. | Python programming to demonstrate Exception handling | CO1,CO2,CO3,CO4,CO5 |
| 12 | Installing, importing accessing and computations on a dataset using Pandas library. | CO1,CO2,CO3,CO4,CO5 |
| 13 | Installing, importing accessing and computations on a dataset using Numpy library. | CO1,CO2,CO3,CO4,CO5 |
| 14 | Programs to demonstrate Files. | CO1,CO2,CO3,CO4,CO5 |
| 15 | Installing, importing  accessing and computations on a dataset using MatplotLib library | CO1,CO2,CO3,CO4,CO5 |

**Learning Resources**

**Text Books**

1. Python Programming using Problem Solving Approach, Reema Thareja, 2017, OXFORD University Press
2. Charles Severance: Python for Everybody, Exploring Data in Python 3, Creative Commons-2016
3. Jake VanderPlas: Python Data Science Handbook, Essential Tools for Working with Data, O_Reilly Media, 2016
4. Python Programming: Problem Solving, Packages and Libraries, Anurag Gupta and G.P. Biswas,2020,  McGraw Hill

**Reference Books**

1. Core Python programming, R. NageswaraRao, 2018, Dreamtech press.
2. Programming with python, T R Padmanabhan, 2017, Springer.
3. Edouard Duchesnay: Statistics and Machine Learning in Python Release 0.2, 2018
4. Wes McKinney: Python for Data Analysis, Agile Tools for Real World Data, O_Reilly Media, 2013

**Resources & other digital material**

1. NPTEL Course: Programming, Data Structures and Algorithms using Python, Registration Link: https://nptel.ac.in/courses/106/106/106106145/
2. Coursera: Introduction to Python Programming, Registration link: https://www.coursera.org/learn/python-programming-intro