**20CS1201-PYTHON PROGRAMMING**

|  |  |  |  |
| --- | --- | --- | --- |
| **Course Category:** | Professional Core | **Credits:** | 3 |
| **Course Type:** | Theory | **Lecture – Tutorial – Practical:** | 2-2-0 |
| **Pre-requisite:** | Basic mathematical knowledge to solve problems and programming | **Sessional Evaluation: Univ.ExamEvaluation:****TotalMarks:** | 4060100 |
| **Course Objective** | Students undergoing this course are expected: |
| * To learn the fundamentals of Python constructs.
* To develop various simple programs using Python.
* To define Python functions, exceptions and various other features.
* To explore features of object oriented concepts.
 |
| **Course Outcomes** | Upon successful completion of the course, the students will be able to: |
| **CO1** | Learn the basic building blocks of Python |
|  **CO2** | Understand the flow of execution, exception handling mechanism and functions for application development |
| **CO3** | Study Strings, Lists and their applications |
| **CO4** | Acquire knowledge in the concepts of Dictionaries, Tuples, and Sets. |
| **CO5** | Comprehend the rules to construct regular expressions, and apply them to text to search for patterns and make changes. |
| **CO6** | Understand Object-oriented programming paradigm in controlling the access of data and reducing the duplication of code by employing code reusability techniques. |

|  |  |
| --- | --- |
| **Course Content** | **UNIT-I****Why Python:** Thrust areas of Python, Open Source Software**Python Basics**: Identifiers, Keyword, Statements and Expressions, variables, Operators, Precedence and Associativity, Data Types, Indentation, Comments, Reading Input and Writing Output, Type Conversions, type() function and “is”operator, Dynamic and Strongly Typed Language **UNIT-II****Control Flow Statements**: if and nested if, for, while Continue and Break statements, Catching Exceptions**Functions:** Built-in Functions, Commonly Used Modules, Function Definition and Calling the function, The return statement and void function, scope and lifetime of variables, Default Parameters, Keyword Arguments, Variable number of arguments with \*args and \*\*kwargs, command line argument **UNIT-III****Strings:** Creating and Storing Strings, Basic String Operations, Access characters by Index, Slicing and Joining of Strings, String Methods and Formatting Strings**Lists:** Creating Lists, List operations, indexing and Slicing, Built-in Functions, List Methods, del() vs pop() |
|  |  **UNIT-IV****Dictionaries:** Creation, accessing and modifying key-value pairs, built-in functions used on dictionaries, dictionary methods, del statement**Tuples and Sets**: Creation of Tuples, Basic Tuple Operations, Indexing and Slicing in Tuples, Built-in functions, Relationship among Tuples, Lists and Dictionaries, Tuple Methods, aggregation with zip(), Sets, Set Methods and Frozen sets**UNIT-V****Files**: Types, Creating, Reading Text data and methods used for it, Manipulating Binary and CSV files, pickling (serialization of objects), os and os.path modules.**Regular Expression Operations**: Using Special Characters, Regular Expression Methods,Named Groups in Python Regular Expression andRegular Expression with glob Module. **UNIT-VI****Object-Oriented Programming:** Classes and Objects and Creating them, The Constructor Method, Classes with Multiple Objects, Class Attributes versus Data Attributes, Encapsulation, Inheritance, Polymorphism. |
| **Text Books & References:** | **Text Book(s):**1. Gowrishankar. S, Veena.A, “Introduction to Python Programming”,CRC Press, Taylor and Francis group,2019.

**Reference Books:**1. [Brian Heinold](https://1lib.in/g/Brian%20Heinold), [A Practical Introduction to Python Programming](https://1lib.in/book/5590130/66aa13).
2. [April Speigh,](https://1lib.in/g/April%20Speight)[Bite-Size Python: An Introduction to Python Programming](https://1lib.in/book/5827522/845c8a). Kenneth A. Lambert, Fundamentals of python - Data structures.
3. Mark Summerfield, Programming in python 3.
4. Yaswanth Kanetkar, Aditya Kanetkar,Let Us Python, BPB Publications, 2020
 |
| **E-Resources** | 1. <https://nptel.ac.in/courses>
2. <https://freevideolectures.com/university/iitm>
3. <https://wiki.python.org/moin/PythonBooks>
 |

|  |
| --- |
| Contribution of Course Outcomes towards achievement of Program Outcomes (3-High, 2-Medium, 1-Low) |
|  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
| CO1 | 3 | 3 | 2 | - | 3 | 3 | - | - | - | - | 3 | 3 | - | - |
| CO2 | 3 | 3 | 2 | - | 2 | 2 | - | - | - | - | 3 | 3 | - | - |
| CO3 | 3 | 3 | 3 |  - | 3 | 2 |  - |  - |  - |  - |  3 |  3 |  - |  - |
| CO4 | 3 | 3 | 2 | - | 2 | 2 | - | - | - | - | 2 | 2 | - | - |
| CO5 | 3 | 3 | 2 | - | 2 | 3 | - | - | - | - | 2 | 2 | - | - |
| CO6 | 3 | 3 | 2 | - | 2 | 2 | - | - | - | - | 2 | 2 | - | - |