19IT41O1–PYTHON PROGRAMMING

(Common to ECE, EEE, CE and ME)

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| **Course Category:** | Open Elective | **Credits:** | 3 |
| **Course Type:** | Theory | **Lecture – Tutorial – Practical:** | 3-0-0 |
| **Prerequisite:** | Require the fundamental concepts of computers and any programming basics | **Sessional Evaluation:**  **Univ.Exam Evaluation:**  **Total Marks:** | 40  60  100 |
| **Objectives** | * To introduce Object Oriented Programming using an easy to use language * To use iterators and generators. * To test objects and handle changing requirements. * To be exposed to programming over the web to develop various applications. | | |

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| **Course Outcomes** | Upon successful completion of the course, the students will be able to: | |
| CO1 | Understand the concepts of object oriented programming in python. |
| CO2 | Study to compose a group of characters and utilization of strings into various applications |
| CO3 | Use generators and iterators to develop different applications |
| CO4 | Develop test cases and handle refactoring to identify its advantages. |
| CO5 | Use serializing objects to program over the web. |
| CO6 | Lean how to create and utilize the advantages of packages |
| **Course Content** | UNIT-I  **INTRODUCTION:**Function Declaration - Import - Objects - Indenting as Requirement - Exceptions – UnboundVariables - Case Sensitive - Scripts - Native Data Types - Booleans - Numbers - Lists -Tuples - Sets - Dictionaries - Comprehensions - List Comprehensions – DictionaryComprehensions - Set Comprehensions.  UNIT-II  **STRINGS**: Strings - Unicode - Formatting - String Methods - Bytes - Encoding - Regular Expressions Verbose - Case Studies  UNIT-III  **CLASSES**: Closures - List of Functions - List of Patterns - File of Patterns - Generators – DefiningClasses - Instantiating Classes - Instance Variables - Iterators – Iterators - Assert –Generator Expressions  UNIT-IV  **FILES**: Reading and Writing Text Files - Binary Files - Stream Objects - Standard Input, Output andError.  UNIT-V  **XML and SERILIZATION**: XML - Atom Feed - Parsing HTML - Searching for Nodes - html - Generation – SerializingObjects - Pickle Files - Versions - Debugging - Serializing to JSON  UNIT-VI  PACKAGING PYTHON LIBRARIES: Directory Structure, Writing Your Setup Script - Classifying Your Package - Examples of Good Package Classifiers - Checking Your Setup Script for Errors - Creating a Source Distribution - Creating a Graphical Installer - Building Installable Packages for Other Operating Systems - Adding Your Software to the Python Package Index - The Many Possible Futures of Python Packaging. | |
| **Text Books and References** | **Text Books:**   1. Mark Pilgrim, “Dive into Python 3”, Apress, 2009. 2. Allen Downey, Jeffrey Elkner, Chris Meyers, “How to Think Like a Computer Scientist - Learning with Python”, Green Tea Press, 2002.   **Reference Books:**   1. John V. Guttag, “Introduction to Computation and Programming using Python”, Prentice Hall of India, 2014 2. Mark Lutz, “Learning Python: Powerful Object-Oriented Programming”, Fifth Edition, O’Reilly, Shroff Publishers and Distributors, 2013 | |
| **E-Resources** | 1. [**https://nptel.ac.in/courses**](https://nptel.ac.in/courses) 2. [**https://freevideolectures.com/university/iitm**](https://freevideolectures.com/university/iitm) | |