SEMESTER - II

SUBJECT: Python Programming

Syllabus

Subject Code	**21CSE23**	**CIE Marks**	**50**
Hours/Week (L: T: P)	**2:2:0**	**SEE Marks**	**50**
Total Hours	**40**	**Examination Hours**	**03**
No. of Credits: 03			

Course Objectives: The course will enable students to:

CLO1	Learn the syntax and semantics of Python Programming Language.
CLO2	Write Python functions to facilitate code reuse and manipulate strings.
CLO3	Illustrate the process of structuring the data using lists, tuples and dictionaries.
CLO4	Demonstrate the use of built-in functions to navigate the file system.
CLO5	Appraise the need for working on web scraping.

CONTENTS	**No. of Hours / RBT levels**
Module 1 **Introduction, Python Basics:** Entering Expressions into the Interactive Shell, The Integer, Floating-Point, and String Data Types, String Concatenation and Replication, Storing Values in Variables, Your First Program, Dissecting Your Program. **Flow control:** Boolean Values, Comparison Operators, Boolean Operators, Mixing Boolean and Comparison Operators, Elements of Flow Control, Program Execution, Flow Control Statements, Importing Modules, Ending a Program Early with sys.exit(). **(Chapters 1, 2)**	**08** **L1, L2**
Module 2 **Functions:** def Statements with Parameters, Return Values and return Statements, The None Value, Keyword Arguments and print(), Local and Global Scope, The global Statement, Exception Handling.	**08** **L1, L2, L3**

Lists: The List Data Type, Working with Lists, Augmented Assignment Operators, Methods. **(Chapters 3, 4)**	
Module 3 **Dictionaries and Structuring Data:** The Dictionary Data Type, Pretty Printing, Using Data Structures to Model Real-World Things. **Manipulating Strings** - Working with Strings, Useful String Methods. **(Chapters 5, 6)**	**08** **L1, L2, L3**
Module 4 **Pattern Matching with Regular Expressions**: Finding Patterns of Text without Regular Expressions, Finding Patterns of Text with Regular Expressions, More Pattern Matching with Regular Expressions, Greedy and Nongreedy Matching, The findall() Method, Character Classes, Making Your Own Character Classes, The Caret and Dollar Sign Characters, The Wildcard Character, Review of Regex Symbols, Case-Insensitive Matching, Substituting Strings with the sub() Method, Managing Complex Regexes, Combining re.IGNORECASE, re .DOTALL, and re .VERBOSE. **Reading and Writing Files**: Files and File Paths, The os.path Module, The File Reading/Writing Process, Saving Variables with the shelve Module, Saving Variables with the pprint.pformat() Function. **Organizing Files**: The shutil Module, Walking a Directory Tree, Compressing Files with the zipfile Module. **(Chapters 7, 8, 9)**	**08** **L1, L2, L3**
Module 5 **Web Scraping:** Project: MAPIT.PY with the web browser Module, Downloading Files from the Web with the requests Module, Saving Downloaded Files to the Hard Drive, HTML. **Working with Excel Spreadsheets:** Excel Documents, Installing the openpyxl Module, Reading Excel Documents, Project: Reading Data from a Spreadsheet, Writing Excel Documents, Project: Updating a Spreadsheet, Setting the Font Style of Cells, Font Objects, Formulas, Adjusting Rows and Columns, Charts. **(Chapters 11, 12)**	**08** **L1, L2, L3**

Course Outcomes: Upon successful completion of this course, student will be able to

21CSE23.1	Demonstrate the concepts of control structures in Python.
21CSE23.2	Implement Python programs using functions and strings.
21CSE23.3	Implement methods to create and manipulate lists, tuples and dictionaries.
21CSE23.4	Apply the concepts of file handling and regExusing packages.
21CSE23.5	Illustrate the working of scraping websites with CSV.

Recommended Tools: Liclipse, PyCharm, Visual Studio 2019

Text Books:

1. Al Sweigart, "Automate the Boring Stuff with Python", William Pollock, 2015, ISBN: 978-1593275990.

Reference Books:

1. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", 2nd Edition, Green Tea Press, 2015, ISBN: 978-9352134755.
2. Charles Dierbach, "Introduction to Computer Science Using Python", 1st Edition, Wiley India Pvt Ltd. ISBN-13: 978-8126556014.
3. Wesley J Chun, "Core Python Applications Programming", 3rd Edition, Pearson Education India, 2015. ISBN-13: 978-9332555365.
4. Roberto Tamassia, Michael H Goldwasser, Michael T Goodrich, "Data Structures and Algorithms in Python", 1st Edition, Wiley India Pvt Ltd, 2016. ISBN-13: 978-8126562176.
5. ReemaThareja, "Python Programming using problem solving approach", Oxford University press, 2017. ISBN-13: 978-0199480173
6. Charles R. Severance, "Python for Everybody: Exploring Data Using Python 3", 1st Edition, Shroff Publishers, 2017. ISBN: 978-9352136278.

Web Reference:

https://infytq.infosys.com/