Course code: Course Title	Course Structure			Pre-Requisite
	L	T	P	
IT106: Open-Source Programming	1	0	2	NIL

Course Objective: The objective of the course is to learn the structure Python Programming Language and facilitate code reuse and manipulate strings. Also, to illustrate the process of structuring the data using lists, tuples, and dictionaries. The course will appraise the need for working on web scraping and extracting data from various file formats.

S. No	Course Outcomes (CO)
CO1	Demonstrate the concepts of control structures in Python.
CO2	Write Python programs using functions and strings.
CO3	Use methods to create and manipulate lists, tuples, and dictionaries.
CO4	Practice concepts of file handling and regex using packages.
CO5	Illustrate working of scraping websites with CSV.

CO6	Illustrate working of dealing with data in various types of files such as Excel, CS,PDF and JSON.

S. No	Contents
UNIT 1	Python Basics: Entering Expressions into the interactive shell, The integer, floating and string data types, string concatenation and replication, storing values in variables, your first Python program. Flow Control: Boolean Values, comparison operators, Boolean Operators, flow control statements, Importing Modules. Functions: definition statement with parameters, Range values, and return values, The none value, Keyword arguments with printf(), Local and Global scope, The global statement, and Exceptional Handling.
UNIT 2	LISTS: The list data type, working with lists, Augmented assignment operator, and List Methods. Dictionary: The Dictionary Data-Type, Using Dictionary to Model real-world Things like a tic-tact toe board, Nested Dictionary, and Lists. Manipulating Strings: Working with strings, Useful string Methods.
UNIT 3	Pattern Matching with Regular Expression: Finding Patterns of text without regular expression, Finding Patterns of text with regular expression, Greedy, and Non-Greedy Matching, the find all () method. Reading and Writing Files: File and File Paths, The os.path module, The file reading or writing process,. Web Scrapping: maplt.py with the browser model, Downloading files from the web with request module, parsing HTML with beautiful soap module.
UNIT 4	Working with Excel Spread Sheets: Installing the openpyxl module, Reading Excel documents, and writing Excel documents. Working with PDF and Word Documents: creating PDF, Extracting text from PDF, Reading and writing Word documents. Working with CSV files and JSON Data: The CSV module (Reading objects and Writing objects), JSON module (Reading JSON and Writing JSON).

REFERENCES

S.No.	Name of Books/Authors/Publishers	Year of Publication / Reprint
1	Automate the Boring Stuff with Python; Al Sweigart, William Pollock.	2020
2	Think Python: How to Think Like a Computer Scientist; A. B. Downey, Shroff/O'Reilly, 2nd edition.	2015

3	Charles Dierbach, "Introduction to Computer Science Using Python", 1st Edition, Wiley India Pvt Ltd. ISBN-13: 978-8126556014.	2010

B. Tech. Mechanical Engineering