SANKALCHAND PATEL UNIVERSITY
।। अथातो ज्ञानजिज्ञासा ।।

FACULTY OF COMPUTER SCIENCE
Master Of Computer Application (Sem-III)
In Effect from Academic Year 2023-24

Branch Name:	MCA
Program Code:	CS201
Course Title	Advanced Python (Elective-IV)
Course Code	3CS2010308T
Pre-requisite Course:	Basic Python Programming

Course Objective:
The objectives of the course are to:

- To be able to understand the various regular expressions available in the Python programming language and apply them.
- To understand the advanced concepts of database programming, multithreading etc
- To be able to use different libraries like Pandas, NumPy,Natplotlib,SciPy etc.
- To be able to understand the concepts of data analytics.

Teaching Scheme (Hours per week)				**Evaluation Scheme (Marks)**				
				Theory		**Practical**		
Lecture	**Tutorial**	**Practical**	**Credit**	**University Assessment**	**Continuous Assessment**	**University Assessment**	**Continuous Assessment**	**Total**
4	-	-	4	60	40	-	-	100

Subject Contents			
Sr. No	**Topic**	**Total Hours**	**Weight (%)**
1	**Pandas**: Introduction, Series, labels, Data Frames, Read CSV Files, Read JSON, Analyzing Data Frames **NumPy**: Creating Arrays, Array Indexing, Array Slicing, Data Types, Copy Vs View, Array Shape,Array Reshape, Array Iterating, Array Join, Array Split, Array Search, Array Sort, Array Filter **Matplotlib:** Introduction, PyPlot, Plotting, Markers, Line, Labels, Grid, Subplot, Scatter, Bars, Histograms, Pie Charts **SciPy:** Introduction, Constants, Optimizers, Sparse Data, Graphs	08	30
2	**Regular Expressions:** Special Symbols and Characters, Regexes and Python, A Longer Regex example (like Data Generators, matching a string etc.)	10	20
3	**Multithreaded Programming:** Threads and Python, Thread and threading module, Single thread and Multithreaded execution, Multithreading example.	08	20
4	**Database Programming:** Databases and Python, The Python DB-API, Python and ORMs	10	15
5	**Python and Data Analytics** Understand the problem By Understanding the Data, Predictive Model Building: Balancing Performance, Complexity, and the Big Data	10	15

List of References:

1. Wesley J Chun, Core Python Applications Programming, 3rd Edition.Pearson
2. Michael Bowles, Machine Learning in Python, Essential techniques for predictive analysis, Wiley
3. Mark Pilgrim, Dive into Python: Python Novice to pro(source: http://diveintopython.org/.)
4. Alex Martelli, Python Cookbook, O'REILLY
5. Luke Sneeringer, Professional Python, WROX
6. Laura Cassell, Python Projects, WROX

Web Resources

1. http://docs.python.org/library/csv
2. http://docs.python.org/library/json
3. http://docs.python.org/library/ext
4. http://en.wikibooks.org/wiki/Python_Programming
5. http://learnpythonthehardway.org/
6. http://jason.org
7. Nosql-database.org
8. www.mongodb.org/
9. W3schools.com

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Store and clean data with Pandas Data frames and can use NumPy, Matplotlib and Scipy.	2 Understanding 3 Applying 4 Analyzing
CLO2	• Understand the concepts of data analytics	1 Remembering 2 Understanding
CL03	• Create the regular expression in python code.	3 Applying 6 Creating
CLO4	Implement the multithreading concepts in python code.	3 Applying 4 Analyzing 5 Evaluate 6 Creating
CLO5	• Implement the concepts of database programming	3 Applying 4 Analyzing 5 Evaluate 6 Creating
CLO6	• Create the application using advanced python methodology.	5 Evaluate 6 Creating

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CLO1	H	H	L		M		L		L	L	H	M	H	H
CLO2	M	H		L	L		L		M	L	L	M	M	
CLO3	M	H	H	L	L		L		L	L	M	M		M
CLO4	M	H	M	L	L		L		L	L	M	M	H	
CLO5	M	H	H	L	L		L		L	L	M	M		H
CLO6	M	H	H	L	L		L		L	L	M	M		

H: High, M: Medium, L: Low