SANKALCHAND PATEL UNIVERSITY
।। अथातो ज्ञानजिज्ञासा ।।

FACULTY OF COMPUTER SCIENCE
Master of Computer Application (Integrated) (Sem-V)
In Effect from Academic Year 2023-24

Branch Name:	IMCA
Program Code:	CS201
Course Title	Advanced Python
Course Code	1CS3010503T
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
3	-	-	3	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	12	25
2	**Regular Expressions:** Special Symbols and Characters, Regexes and Python, A Longer Regex example (like Data Generators, matching a string etc.)	08	15
3	**Multithreaded Programming:** Threads and Python, Thread and threading module, Single thread and Multithreaded execution, Multithreading example. **Database Programming:** Databases and Python, The Python DB-API, Python and ORMs	10	25
4	**Web Development** :Web Clients and Servers; Python web Client tools, Web (HTTP) servers and Related Modules **Web Application Programming:** Helping web servers processing client data, Building CGI applications (Creating form page, Generating Result Page, Fully interactive web sites) Advanced CGI (like Multi part form submission, File upload, Cookies), Introduction to WSGI, Real world Web development	12	25
5	**Python and Data Analytics** Understand the problem By Understanding the Data, Predictive Model Building: Balancing Performance, Complexity, and the Big Data	06	10

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