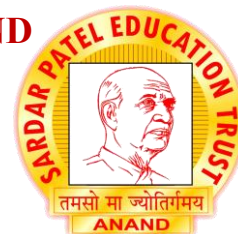




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Revised Syllabus as per NEP 2020 with effect from the Academic Year 2026-2027

Master of Science (Data Science)
Semester – I

Course Code	PGN1PMDS06	Title of the Course	Practical – I
Total Credits	04	Hours per Week	04 Hours / Week

Course Learning Outcomes (CLOs)

CLO 1	Perform Python programming fundamentals, data structures, control structures, functions and built-in utilities.
CLO 2	Perform data manipulation, cleaning, aggregation and analysis using Pandas and visualizations using Matplotlib for exploratory data analysis
CLO 3	To import, clean, organize, and analyze data using spreadsheet tools and functions.
CLO 4	To apply advanced spreadsheet features, including lookup functions, Pivot Tables, charts, and data analysis tools to generate meaningful reports and support decision-making.

Unit	Course Content	Learning Pedagogies*	CLO(s)
1.	Practical training and hands-on sessions on Python	Problem-Based Learning, Self Directed Learning	CLO1, CLO2
2.	Practical training and hands-on sessions on Advanced Excel	Problem-Based Learning, Self Directed Learning	CLO3, CLO4

Assessment Methodologies

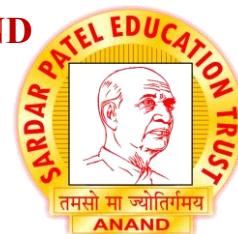
(U)	Internal Assessment (a) Internal Formative assessment (20 Marks) i. Assignment ii. Quizzes (b) Internal Summative Assessment (30 Marks) i. Mid-term Test
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(V)	External Examination (50 Marks) (a) Term-end Examination
(W)	Weightage of Learning Efforts for External Assessment

Unit	Aligned COs	Total Learning Hours	Approximate weightage (Marks) to Learning levels (BT)			Total Marks
			Remember (R)	Understanding (U)	Application/ Analyse & above (A)	
I	CLO1, CLO2	60	5	8	12	25
II	CLO3, CLO4	60	5	8	12	25
		120	10	16	24	50

Assessment and Evaluation			
Sr. No	Assessment/Evaluation	Component	Weightage (%)
1	Continuous Internal Evaluation	Assignments, Quizzes, Laboratory Regularity, Internal test	50
2	End-Semester Examination	Practical Examinations	50

PLO – CLO Mapping								
Practical - I								
	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8
CLO 1	3	3	2	1	0	0	0	1
CLO 2	3	3	2	1	0	0	0	1
CLO 3	3	3	3	2	1	0	0	1
CLO 4	3	3	3	3	2	2	0	2
Note: • High: 03 ; Moderate: 02 ; Low: 01 ; No Mapping: 00								

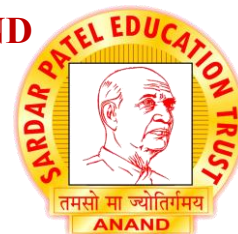
Suggested References and E-Resources for Further Reading
- Python Data Science Handbook: Essential Tools for Working with Data — Jake VanderPlas (2016) - Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython (2nd Edition) — Wes McKinney (2017)



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• Learning Python (4th Edition) — Mark Lutz (2009)
• Excel Data Analysis For Dummies, 2nd Edition Published by: John Wiley & Sons, Inc
• Data Analysis with Excel 2016 by Tutorials Point (I) Pvt. Ltd
• Advanced Data Analysis: F anced Data Analysis: From Excel Pivcel PivotTables t ables to Microsoft Christopher C. Brown Denise Pan Gabrielle Wiersma
• https://www.w3schools.com/datascience/ds_python.asp
• https://www.geeksforgeeks.org/data-science-with-python-tutorial/
• https://www.tutorialspoint.com/advanced_excel/advanced_excel_instant_data_analysis.htm
• https://support.microsoft.com/en-us/office/analyze-data-in-excel-3223aab8-f543-4fda-85ed76bb0295ffc4
