



(An Autonomous Institution - AFFILIATED TO ANNA UNIVERSITY, CHENNAI)

S.P.G.Chidambara Nadar - C.Nagammal Campus
S.P.G.C. Nagar, K.Vellakulam – 625 701 (Near VIRUDHUNAGAR).

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Industry Certified Value Added Course on

“Data Analytics Using Python”

(2026 – 2027 ODD SEMESTER)

COURSE OBJECTIVES

- To understand the fundamentals of data management and data preparation techniques for handling structured datasets.
- To apply spreadsheet formulas, functions, and database functions for data analysis and reporting.
- To analyze large datasets using Pivot Tables and data summarization techniques.
- To create meaningful visualizations and dashboards for effective data interpretation and decision-making.
- To develop data analytics applications using Python, Pandas, and Streamlit for real-world problem solving.

UNIT 1: DATA MANAGEMENT AND DATA PREPARATION (10 Hours)

Introduction to Data Management – Importance of Data Quality – Data Organization Techniques – Sorting and Filtering Data – Flash Fill – Auto Filter – Advanced Filtering – Data Cleaning Concepts – Removing Duplicates – Splitting Cell Values – Smart Fill – Identifying and Handling Blank Values – Practical Exercises on Data Preparation and Cleaning.

UNIT 2: DATABASE FUNCTIONS AND SPREADSHEET ANALYTICS (10 Hours)

Introduction to Database Functions – Basic Syntax of D-Functions – Creating and Expanding D-Functions – Data Aggregation Techniques – Spreadsheet Formulas and Functions – SUM, AVERAGE, MIN, MAX, COUNT Functions – Logical Functions using IF – Lookup Functions using VLOOKUP – Practical Exercises on Data Analysis and Reporting using Spreadsheet Functions.

UNIT 3: DATA ANALYSIS USING PIVOT TABLES (10 Hours)

Introduction to Data Analysis – Creating Pivot Tables – Customizing Pivot Tables – Data Grouping Techniques – Calculated Fields – Pivot-Based Reporting – Slicers and Interactive Filtering – Summarizing and Analyzing Large Datasets – Practical Exercises on Business Data Analysis using Pivot Tables.

UNIT 4: DATA VISUALIZATION AND DASHBOARD DESIGN (10 Hours)

Introduction to Data Visualization – Principles of Effective Visualization – Creating Charts and Graphs – Bar Charts – Column Charts – Line Charts – Chart Formatting and Customization – Dashboard Concepts – Visual Storytelling with Data – Interactive Reporting Techniques – Practical Exercises on Visualization and Dashboard Development.

UNIT 5: PYTHON FOR DATA ANALYTICS (10 Hours)

Introduction to Python Programming – Variables and Data Types – Classes and Objects – Object-Oriented Programming Concepts – Inheritance – Introduction to Pandas – Data Import and Manipulation using Pandas – Streamlit User Interface Development – Connecting to Data Sources – Building Simple Data Analytics Applications – Mini Project using Python and Streamlit.

Total : 50 Hours

COURSE OUTCOMES

After successful completion of the course, the students will be able to

CO. No.	Course Outcome	Knowledge Level
CO1	Apply data management and data preparation techniques to organize, clean, and preprocess datasets for analysis.	K3 - Apply
CO2	Make use of spreadsheet formulas, functions, and database functions to perform data analysis and generate meaningful reports.	K3 - Apply
CO3	Apply Pivot Tables, grouping techniques, calculated fields, and slicers to organize datasets effectively.	K3 - Apply
CO4	Build effective data visualizations and dashboards using charts and graphical representations for decision support.	K3 - Apply
CO5	Develop data analytics applications using Python, Pandas, and Streamlit for solving real-world data-driven problems.	K3 - Apply

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1:

Professional Skills: The ability to understand, analyze and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data analytics, and networking for efficient design of computer-based systems of varying complexity.

PSO2:

Problem - Solving Skills: The ability to apply standard practices and strategies in software project development using open-ended programming environments to deliver a quality product for business success.

CO - PO MAPPING

Course Name	CO. No.	POs											PSOs	
		1	2	3	4	5	6	7	8	9	10	11	1	2
Data Analytics using Python	CO1	H	M	L	L	M	L	-	-	-	M	M	H	M
	CO2	H	M	M	L	H	L	-	-	-	M	M	H	H
	CO3	H	H	M	M	H	M	-	M	L	M	M	H	H
	CO4	H	M	H	M	H	M	-	M	L	H	M	H	H
	CO5	H	H	H	H	H	M	-	M	L	H	M	H	H

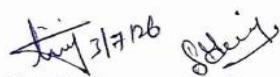
H - High, M - Moderate, L – Low

SDG MAPPING

Data Analytics using Python	SDGs																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
				✓				✓	✓								✓


Trainer

Mr.A.Venkatesh,
Technical Head,
Vinsup InfoTech Pvt
Ltd,
Madurai.


VAC Course Incharges

Mrs.E. Vijayalakshmi, AP-CSE
Mrs.S.Maria Sobana, AP-CSE


VAC Coordinators

Mrs.S.Athilakshmi, AP/CSE
Mrs.S.ArchanaDevi, AP/CSE


HOD – CSE

Dr.A.Meenakshi,
Prof & HOD-CSE