GANPAT UNIVERSITY									
FACULTY OF MANAGEMENT STUDIES									
Programme	Bachelor of Business Administration				Branch / Spec.	Business Analytics			
Semester	VI				Version	1.0.0.0			
Effective from Academic Year		2025-26			Effective for the Batch Admitted in			July 2023	
Subject Code	6A04PF2	Subject Name			Programming for Analytics - II				
Teaching Scheme					Examination Scheme (Marks)				
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	04	00	00	00	04	Theory	40	60	100
Hours	04	00	00	00	04	Practical	00	00	00

Pre-requisite:

Objective:

This course enables students on using the SAS macro facility to design, write, and debug macro programs, with an emphasis on understanding how programs that contain macro code are processed. This course also teaches processing of datasets using Structured Query Language (SQL).

Learning Outcomes/Course Outcomes:

On successful completion of the course, the students will be able to:

CO1- Perform text substitution in SAS code, Use macro variables and macro functions. Automate and customize the production of SAS code.

CO2- Conditionally or iteratively construct SAS code. Write self-modifying, data-driven programs. Query and subset data

CO3- Summarize and present data. Combine tables using joins and set operators. Create and modify tables and views.

CO4- Create data-driven macro variables using a query. Access DBMS data with SAS/ACCESS technology.

Mapping of PO-CO and PSO-CO:

Course Outcome (CO) No.	PO-CO Mapping						PSO-CO Mapping			
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4
CO1	3	3	1	3	1	1	3	2	2	3
CO2	3	3	2	3	1	1	3	3	2	3
CO3	3	3	2	3	1	1	3	2	3	3
CO4	3	3	1	3	1	1	3	2	2	3

Theory Syllabus

Unit	Content	Hrs.
1	**Introduction** Why SAS macro? Setting up for this course. **SAS Macro Facility** Program flow. Creating and using macro variables. **Storing and Processing Text** Macro functions. Using SQL to create macro variables. Using the DATA step to create macro variables. Indirect references to macro variables.	15
2	**Working with Macro Programs** Defining and calling a macro. Macro variable scope. Conditional processing. Iterative processing. **Developing Macro Applications** Storing macros. Generating data-dependent code. Validating parameters and documenting macros **Essentials** Setting up for this course. Overview of SAS Foundation. Course logistics. Course data files. Introducing the Structured Query Language. Overview of the SQL procedure. Exploring tables. Specifying columns	15
3	**PROC SQL Fundamentals** Subsetting data. Presenting data. Summarizing data. Creating and managing tables. Using DICTIONARY tables. **SQL Joins** Introduction to SQL joins. Inner joins. Outer joins. Complex SQL joins **Subqueries**	15

	Noncorrelated subqueries. Correlated subqueries. In-line views. Creating views with the SQL procedure. Subqueries in the SELECT clause. Remerging summary statistics.	
4	**Set Operators** Introduction to set operators. The INTERSECT operator. The EXCEPT operator. The UNION operator. The OUTER UNION operator. **Using and Creating Macro Variables in SQL** Interfacing PROC SQL with the macro language. Creating data-driven macro variables with a query. Using macro variables in SQL. **Accessing DBMS Data with SAS/ACCESS** Overview of SAS/ACCESS technology. SQL pass-through facility. SAS/ACCESS LIBNAME statement & PROC Fed SQL.	**15**
	Exam: Theory 100%,	
Text Book:		
	1. SAS® SQL 1: Essentials, SAS Official Course Notes, SAS Publishing. Cary, U.S.A. Latest Edition.	
Reference Books:		
	SAS® Macros: Essentials, SAS Official Course Notes, SAS Publishing. Cary, U.S.A. Latest Edition.	
Online Resource:		
	https://libguides.library.kent.edu/SAS/syntax.	