MS3251: ANALYTICS USING SAS

Effective Term
Semester B 2024/25

Part I Course Overview

Course Title
Analytics using SAS

Subject Code
MS - Department of Decision Analytics and Operations
Course Number
3251

Academic Unit
Department of Decision Analytics and Operations (DAOS)

College/School
College of Business (CB)

Course Duration
One Semester

Credit Units
3

Level
B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
Nil

Precursors
CB2200 Business Statistics

Equivalent Courses
Nil

Exclusive Courses
Nil

Part II Course Details

Abstract

This course provides students with fundamental concepts and knowledge of data analytics using the SAS software. Students will learn techniques for importing data into SAS, manipulating SAS data tables, and simple SAS reports. After this course, students are ready for data analytics positions in various sectors.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Apply analytics concepts in data management.	10	x	x	x
2	Process raw data files in different formats and put them into the SAS system.	10	x	x	x
3	Manipulate the SAS data sets for various data processing activities such as variable selection, observation selection, observation expansion, observation merging, outlier handling, missing value handling, etc.	60	x	x	x
4	Produce simple statistical and summary reports using the SAS system.	20	x	x	x

A1: Attitude
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Learning and Teaching Activities (LTAs)

	LTAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lecture	Students will learn the concepts and general knowledge of analytics using SAS. The methods of data manipulation and statistical reporting are demonstrated.	1, 2, 3, 4	
2	In-class exercises	Students will perform in-class hand-on exercise so that learning difficulties can be identified and tackled.	1, 2, 3, 4	

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Assignments	1, 2, 3, 4	30	
2	Tests	1, 2, 3, 4	20	

Continuous Assessment (%)
50

Examination (%)
50

Examination Duration (Hours)
2

Assessment Rubrics (AR)

Assessment Task
Assignments

Criterion
ABILITY to UNDERSTAND the knowledge of analytics using SAS.

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Assessment Task
Tests

Criterion
ABILITY to EXPLAIN the key concepts and logical algorithm of analytics using SAS.

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Assessment Task
Written Examination

Criterion
ABILITY to EXPLAIN in DETAIL to assess students' professional knowledge of data management using SAS and the ability to apply it to solve business problems.

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Part III Other Information

Keyword Syllabus

Concepts of analytics using SAS
SAS programming foundation.

SAS Basic
Raw data handling; SAS dataset creation; Produce simple statistical reports.

Basic analytics using SAS
Add more information to all or selected observations; Variables selection; Observations selection; Outlier handling; Missing value handling; Calculate across observations; Make use of SAS functions.

Modifying and combining data
Multiple datasets handling; Combine SAS datasets; Create a sample of data.

Producing Statistical and Summary Reports
Generate statistical reports using FREQ, MEANs, and REPORT procedures. Delivery output of reports in a variety of formats.

Reading List

Compulsory Readings

	Title
1	Step-by-Step Programming with Base SAS 9.4, 2nd Edition, 2017, SAS Institute.

Additional Readings

	Title
1	SAS Certification Preparation Guide: Base Programming for SAS 9, 5th Edition, 2018, SAS Institute.
2	Beginning SAS Programming: a true beginner’ s guide for learning SAS, Yufeng Guo, 2015, CreateSpace Independent Publishing Platform.
3	Practical and Efficient SAS Programming: The Insider’ s Guide, Martha Messineo, 2017, SAS Institute.
4	SAS Essentials: Mastering SAS for Data Analytics, 2nd Edition, Alan C. Elliott, Wayne A. Woodward, 2015, Wiley.