

# MS4251: MARKETING ANALYTICS TECHNIQUES

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## Effective Term

Semester A 2025/26

## Part I Course Overview

### Course Title

Marketing Analytics Techniques

### Subject Code

MS - Decision Analytics and Operations

### Course Number

4251

### Academic Unit

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

MS3252 Regression Analysis

### Precursors

MS3251 Analytics using SAS

### Equivalent Courses

Nil

### Exclusive Courses

MS4216 Applied Multivariate Methods, MS4225 Business Research Modelling

## Part II Course Details

### Abstract

This course aims to :

- Develop students' ability to use data analysis and statistical modelling techniques introduced in the course to solve real world marketing problems which are related to marketing research and survey data.

### Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Evaluate a wide range of statistical modeling techniques to solve marketing problems, and differentiate among these methodologies;	50	x	x	x
2	Apply a wide range of marketing analytics knowledge via computer software such as SAS, SPSS, R, and Python; Communicate the analysis and findings effectively to non-specialists.	50	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	Lectures	Students will participate in interactive lectures and discussions to understand key concepts in marketing analytics techniques.	1, 2
2	Technique drilling	Students will complete individual and group assignments that require evaluating different statistical theories and their relevance to business problems. Apply statistical software to analyze real-life business data. Practice data analysis, interpret results, and make recommendations.	1, 2

### Assessment Tasks / Activities (ATs)

ATs	CILO No.	Weighting (%)	Remarks ("- for nil entry)	Allow Use of GenAI?
1 Exercises Regular exercises that require students to apply marketing analytics techniques, use statistical software, and interpret data	1, 2	30	-	Yes
2 Midterm Test A written exam assessing students' understanding of key concepts in marketing analytics techniques, and their ability to evaluate statistical theories and methods.	1, 2	30	-	No

**Continuous Assessment (%)**

60

**Examination (%)**

40

**Examination Duration (Hours)**

2

**Additional Information for ATs**

Examination A written exam assessing students' understanding of key concepts in marketing analytics techniques, and their ability to evaluate statistical theories and methods.

**Assessment Rubrics (AR)****Assessment Task**

Exercises

**Criterion**

Regular exercises that require students to apply marketing analytics techniques, use statistical software, and interpret data

**Excellent (A+, A, A-)**

Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base and familiarity with literature. Clearly and correctly states most critical points and important findings of the project. Excellent presentation skills.

**Good (B+, B, B-)**

Evidence of original thinking, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature. Clearly and correctly states some critical points and important findings of the project. Good presentation skills.

**Fair (C+, C, C-)**

Little evidence of original thinking, little evidence of critical capacity and analytic ability; reasonable understanding of issues. Correctly states some critical points and some of the findings of the project. Average presentation skills.

**Marginal (D)**

Very little evidence of original thinking, critical capacity, and analytic ability but shows marginal understanding of subject matters and issues and states a few critical points and findings of the project. Below average presentation skills.

**Failure (F)**

Very little evidence of familiarity with the subject matter and issues; weakness in critical and analytic skills. Poor presentation skills.

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**Assessment Task**

Midterm Test

**Criterion**

A written exam assessing students' understanding of key concepts in marketing analytics techniques, and their ability to evaluate statistical theories and methods.

**Excellent (A+, A, A-)**

Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.

**Good (B+, B, B-)**

Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.

**Fair (C+, C, C-)**

Some evidence of understanding of the subject; ability to perform basic statistical model building and data analysis for marketing research.

**Marginal (D)**

Adequate familiarity with the subject matter; shows marginal ability to perform basic statistical model building and data analysis for marketing research.

**Failure (F)**

Little evidence of familiarity with the subject matter; weakness in critical and analytic skills; limited or irrelevant use of literature.

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**Assessment Task**

Final Exam

**Criterion**

A written exam assessing students' understanding of key concepts in marketing analytics techniques, and their ability to evaluate statistical theories and methods.

**Excellent (A+, A, A-)**

Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.

**Good (B+, B, B-)**

Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.

**Fair (C+, C, C-)**

Some evidence of understanding of the subject; ability to perform basic statistical model building and data analysis for marketing research.

**Marginal (D)**

Adequate familiarity with the subject matter to enable the student to progress without repeating the course.

**Failure (F)**

Little evidence of familiarity with the subject matter; weakness in critical and analytic skills; limited or irrelevant use of literature.

## Part III Other Information

### Keyword Syllabus

#### Introduction

Purpose of analytics for marketing. Characteristics of data in marketing field. Some examples of use of statistical models in marketing. Maximum likelihood estimation. Goodness of fit and test of independence. Measures of Association.

#### Logit Models

Review of logistic regression. Binary logit models. Multinomial logit models. Ordinal logit models. Cumulative logit models. Business applications such as market response models.

#### Principal Components Analysis

Basic concepts of principal components. Estimation of principal components. Determining the number of principal components. Business applications such as index construction.

#### Exploratory Factor Analysis

Basic concepts of exploratory factor analysis. Methods of parameter estimation. Orthogonal and oblique rotations of factors. Estimation of factor scores. Exploratory Factor analysis versus principal components analysis. Business applications such as attitude measurement.

#### Cluster Analysis

Distance and similarity measures. Hierarchical clustering methods. Non-hierarchical methods. Dendrogram. Business applications such as market segmentation.

#### Multidimensional Scaling

Proximity measures. Metric and nonmetric methods. Geometrical representation. Optimal properties and goodness of fit measures. Business applications such as product positioning.

### Reading List

#### Compulsory Readings

	Title
1	Agresti A, An Introduction to Categorical Data Analysis, 2nd Edition, John Wiley, 2007
2	Allison P D, Logistic Regression using the SAS System, 2nd Edition, SAS Institute 2012.
3	Hair J F, Black B, Babin B, and Anderson R, Multivariate Data Analysis, 7/e, Pearson Prentice Hall, 2010.
4	Pituch K A and Stevens J P, Applied Multivariate Statistics for the Social Sciences: Analysis with SAS and IBM' s SPSS, 6/e, Routledge, 2015
5	Sarmiento R and Costa V, Comparative Approaches to Using R and Python for Statistical Data Analysis, Hershey, PA: IGI Global 2017

#### Additional Readings

	<b>Title</b>
1	Johnson R A and Wichern D W, Applied Multivariate Statistical Analysis, 6/e, Prentice Hall, 2007.