SS3716: MULTIVARIATE ANALYSIS FOR PSYCHOLOGICAL RESEARCH

Effective Term
Semester A 2024/25

Part I Course Overview

Course Title
Multivariate Analysis for Psychological Research

Subject Code
SS - Social and Behavioural Sciences
Course Number
3716

Academic Unit
Social and Behavioural Sciences (SS)

College/School
College of Liberal Arts and Social Sciences (CH)

Course Duration
One Semester

Credit Units
3

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

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
SS3708 Design & Analysis for Psychological Research II

Precursors
Nil

Equivalent Courses
Nil

Exclusive Courses
Nil

Part II Course Details

Abstract

The purpose of this course is to equip students with the multivariate analytical methods that are commonly used in psychology research. Students will be able to apply appropriate methods for data analysis, interpret the results in the report according to established standard. Upon completion of this course, students will be competent to carry out a rigorous scientific research independently (e.g., Final Year Project).

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Describe major multivariate statistical methods in psychological research;	20		x	
2	Explain the findings reported in journal articles and evaluate them critically;	20		x	
3	Apply appropriate multivariate statistics to address various research questions; and	30	x	x	x
4	Report and interpret statistical results properly.	30	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 learn about the key concepts, rationale, and principles underlying the statistical methods. They will explore and discuss real-life examples to understand how multivariate statistical methods can be applied to address corresponding research questions.	1, 3, 4	
2	Workshops	Students will gain hands-on experience with real data by working in computer labs. They will learn how to run multivariate analyses using SPSS, generate results, and properly interpret their findings.	2, 3, 4	

3	Assigned Readings	Students will critically review selected journal articles to learn how various multivariate methods are used (or misused) and reported in different types of research. This will help them develop a deeper understanding of the appropriate application and interpretation of these techniques.	1, 2, 3, 4	

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Quiz	1, 2, 3	40	
2	Presentation	1, 2, 3, 4	30	
3	Paper	1, 2, 3, 4	30	

Continuous Assessment (%)

100

Examination (%)

0

Assessment Rubrics (AR)

Assessment Task

1. Quiz

Criterion

Familiarity with the concepts; understanding and application of the methods; analytical and critical thinking

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-)

Student who is profiting from the university experience; understanding of the subject; ability to develop solutions to simple problems in the material.

Marginal (D)

Sufficient 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.

Assessment Task

2. Presentation

Criterion

Familiarity with the methods; original and critical thinking; collaboration and coordination

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-)

Student who is profiting from the university experience; understanding of the subject; ability to develop solutions to simple problems in the material.

Marginal (D)

Sufficient 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.

Assessment Task

3. Paper

Criterion

Familiarity with the literature; understanding and application of the methods; original and critical thinking; Writing skills

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-)

Student who is profiting from the university experience; understanding of the subject; ability to develop solutions to simple problems in the material.

Marginal (D)

Sufficient 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

Characteristics of multivariate data analysis, managing multivariate data, multivariate analysis of variance (MANOVA), exploratory factor analysis, multiple regression, and logistic regression.

Reading List

Compulsory Readings

	Title
1	Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). Multivariate data analysis (Eighth edition. ed.). Andover: Cengage.

Additional Readings

	Title
1	Bordens, K. S., & Abbott, B. B. (2005). Research design and methods: A process approach (6th ed.). Boston: McGraw-Hill.
2	Byrne, B. M. (1998). Structural equation modeling with LISREL, PRELIS, and SIMPLIS: Basic concepts, applications, and programming. Mahwah, N.J.: Lawrence Erlbaum.
3	Cardinal, R., & Aitken, M. (2006). ANOVA for the behavioural sciences researchers. Mahwah, New Jersey: Lawrence Erlbaum.
4	Dugard, P., Todman, J. B., & Staines, H. (2010). Approaching multivariate analysis: A practical introduction (2nd ed.). New York, NY: Routledge.
5	George, D., & Mallery, P. (2006). SPSS for Windows step by step: A simple guide and reference (6th ed.). Boston: Pearson/Allyn and Bacon.
6	Keith, T. Z. (2006). Multiple regression and beyond. Boston: Pearson/Allyn and Bacon.
7	Leech, N., Barrett, K., & Morgan, G. (2005). SPSS for intermediate statistics: Use and interpretation (2nd ed.). Mahwah, New Jersey: Lawrence Erlbaum.
8	Pett, M. A., Lackey, N. R., & Sullivan, J.J. (2003). Making sense of factor analysis: The use of factor analysis for instrument development in health care research. Thousand Oaks, Calif.: Sage.
9	Spicer, J. (2005). Making sense of multivariate data analysis. Thousand Oaks, Calif.: Sage.
10	Stevens, J. (2002). Applied multivariate statistics for the social sciences (4th ed.). Mahwah, N.J.: Lawrence Erlbaum.
11	Tabachnick, B. G., & Fidell, L.S. (2007). Using multivariate statistics (5th ed.). Boston: Pearson/Allyn and Bacon.
12	Vogi, P. W. (2007). Quantitative research methods for professionals. Boston: Pearson/Allyn and Bacon.