UNIVERSITY OF SAHIWAL

Course Specification File*

*Extend the space where required

A. Course Identification and General Information

Faculty: Faculty of Economics and Management Sciences	Department: **Business Administration**
Degree Program: MS	Course Name: Quantitative Data Analysis
Course Code:	Course Category: NA
Credit Value: 3	Course Level/Semester: Level 7 /Semester 2
Nature of Course (Theory/Lab): Theory	Course Specific Requirement (If any): **Basic understanding of research Concepts**
Contact Hour: 3	Additional Information (If any):

B. Faculty Member Information

Name of Faculty Member: **Dr. Waris Ali**	Designation: Associate Professor
Contact Details: +923004472611	Email: waris.ali@uosahiwal.edu.pk
Office No: Chairperson office	Office Visiting Hour: Thursday 08:00 to 10:00 AM
Course Level/Semester: 2nd	Additional Information (If any):

C. Course Description and Objectives

This module enables to students to quantitatively analyze the relationship between two or more variables measured either in metric or non-metric ways.

D. Course Learning Outcomes

At the end of the course the students should be able to:

- Data analysis and the research process
- Defining variables and data entry.
- Analyzing data and examining data.
- Concepts and their Measurement
- Summarizing data
- Explore differences between scores on two variables
- Explore relationships between two variables
- Conduct Exploratory and Confirmatory Factor Analysis
- Do Multivariate analysis: Multiple regression analysis and Structural Equation Modeling

E. Program Reflection

The course contributes to accomplishing the following program objective (s) and learning outcomes of graduate programs.

Develop Critical Thinking, Problem-Solving, and Decision-Making Skills

The program focuses on skill development of students particularly critical thinking, problem-solving and decision-making skills to enable students to analyse complex business situations and make effective decisions.

Application of Data Analysis, Quantitative and Qualitative Methods

Students will apply data analysis techniques and research methods to find the solution of problem in different scenarios. This includes using qualitative and quantitative tools to inform strategic decision-making.

Program Learning Outcomes:

PLO1: Students should be able to explain the role of data analysis in the research process, including defining variables and managing data entry effectively.

PLO1: Students should be able to summarize data using appropriate statistical measures and critically examine data for patterns, trends, and anomalies.

PLO1**:** Students should be able to analyze relationships and differences between variables using appropriate statistical techniques, such as correlation and comparison of scores.

PLO1: Students should be able to conduct multivariate analyses, including multiple regression and structural equation modeling, to address complex research questions.

PLO1: Students should be able to conduct exploratory and confirmatory factor analysis to assess the underlying structure of data and measure latent constructs.

F. Course Schedule / Weekly Course Outline

Topic Description	Weeks
Introduction to the Module **Data analysis and the research process** • Quantitative data analysis and the • research process • Causality and research design • Survey design and causality	1

Analysing data • Entering and editing data in Data • Naming variables in Data Editor • Defining other aspects of variables in Data Editor	2
Analyzing data • Selecting cases • Relational operators • Combining logical relations • Recoding the values of variables • Computing a new variable • Missing data and computing scores to form new measures	3
Examining your data	4
Concepts and their Measurement • Types of variable • Dimensions of concepts • Validity and reliability of measures	5
Summarizing data • Frequency distributions • frequency tables and histograms • Measuring central tendency Measuring dispersion • Stems and leaves, boxes and whiskers • The shape of a distribution	6
Sampling and statistical significance • Sampling • Sampling problems • Statistical significance • Determining sample size	7
Bivariate analysis: exploring differences between scores on two variables • Criteria for selecting bivariate tests of differences • Parametric versus non-parametric tests • Categorical variables and nonparametric tests • Non-categorical variables and nonparametric tests • Non-categorical variables and parametric tests • Analysis of variance for three or more related means	8
Bivariate analysis: exploring relationships between two variables • Crosstabulation • Crosstabulation and statistical significance: the chi-square ($\chi 2$) test • Correlation • Other approaches to bivariate relationships • Regression Overview of types of variable and methods of examining relationships	9
Multivariate analysis: Exploratory factor analysis	10 & 11

Multivariate analysis: Multiple regression analysis	12 & 13
Multivariate analysis: Confirmatory Factor Analysis	14 & 15
Multivariate analysis: Structural Equation Modeling	16 & 17
Revision	18

G. Schedule of Assignments/ Quiz / Academic/Research Activity

Sr. No	Description of Activity	Nature of Activity	Week	Expected Outcomes
1	Class activity 1	• Defining variables and data entry	3rd	Learn data entry in SPSS
2	Class activity 2	• Examining your data	4th,	Learn examining data before performing analysis
3	Class activity 3	• Summarizing data	6th	Learn summarizing data
4	Class activity 4	• Differences between scores on two variables	8th	Learn examining difference between two variables
5	Class activity 5	• Bivariate analysis: exploring relationships	9th	Learn examining relationship between two variables
6	Class activity 6	• Exploratory factor analysis	11th	Learn Exploratory factor analysis
7	Class activity 6	• Multiple regression analysis	13th	Learn multiple regression analysis
8	Class activity 6	• Confirmatory factor analysis	15th	Learn confirmatory factor analysis
9	Class activity 6	• Structure Equation Modelling	17th	Learn structure equation modelling

H. Course Components (Total contact hours and credits per semester)

	Lecture	Tutorial	Laboratory / Studio	Practical	Other	Total
Contact Hours	48					48
Credit	3					3

I. Teaching-Learning Strategies

This course is based on case study analysis, assignments, presentations, and an academic project. The course will improve the presentation skills of the students as well. The classes will remain participant-centered and students will be encouraged to participate in class discussions. The students may able to understand the insights about marketing philosophy by studying the course. The teacher will use a combination class room lecturing (with lecture slides) and (a series of) feedback sessions on Assignments/practical projects to enhance the students learning experience. Likewise, teacher will provide an hour in addition to class room lectures for solving students concerns.

J. Learning Resources / Recommended Books / Research Papers /Web-Links / Software

Books

Aljandali, A. (2016). *Quantitative analysis and IBM® SPSS® statistics*. Cham, Switzerland: Springer International Publishing.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2013). *Multivariate data analysis: Pearson new international edition PDF eBook*. Pearson Higher Ed.

Bryman, A., & Cramer, D. (2012). *Quantitative data analysis with IBM SPSS 17, 18 & 19: A guide for social scientists*. Routledge.

List Electronic Materials, Web Sites, Facebook, Twitter, etc.

EBEForum Dr. Waris Ali – YouTube

K. Facilities Required (If any)

- **Classroom required to accommodate 35 students**
- **Multimedia Projector required**

L. Additional Information (If any)

- **Multimedia Projector & Computers and Installation of SoftwareMS Word & MS Excel, MS PowerPoint, SPSS**

Name of Course Instructor		**Dr. Waris Ali**	
Signature:		Date:	**11-01-2024**
Cluster Head (Name):		**Dr. Muhammad Husnain**	
Signature:		Date:	**20-01-2024**

Departmental Committee Review:

Dr. Shaheera Amin	Dr. Muhammad Husnain	Dr. Waris Ali
Dr. Saira Aziz	Dr. Atif Ali Gill	Dr. Ammara Saleem

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Program Coordinator (Signature and Stamp):		**Dr. Muhammad Husnain**	
Signature:		Date:	**23-01-2024**
Chairperson/ Teacher In charge (Signature and Stamp):		**Dr. Waris Ali**	
Signature:		Date:	**24-01-2024**