LECTURING UNIT FOR

MBSU1125 – Statistical Data Analysis

**Semester III, Class of 2023, Academic Year 2024/2025** Course Term : August 2024 – December 2024 Faculty : Livia Janice Widiapradja, Ph.D.

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Class : Software Engineering

Credits : 3 credits

**COURSE DESCRIPTION**

This course explains the basic principles of statistical methods and some simple analysis methods that can be applied to various fields of applied business and economics. The topics covered in this course are descriptive statistics, probability, principles of estimation and hypothesis testing, estimation and hypothesis testing the mean and proportion of the population, and estimation and testing hypotheses about the difference between the mean and the proportions of two populations.

**LEARNING OBJECTIVES (LO)**

After completing this course, students are expected to be able to:

1. Be able to explain the fundamentals of statistical theory
2. Be able to apply the fundamentals of statistical theory to solve cases / issues in the field of business
3. Ability to organize and describe the data that has been collected to solve cases / business problems

**RELATION WITH “CAPAIAN PEMBELAJARAN LULUSAN (CPL) PROGRAM STUDI”**

This course contributes to accomplish the following Learning Outcomes (Capaian Pembelajaran Program Studi):

1. Technical Knowledge

**BAHAN KAJIAN**

1. Technical Knowledge

**COURSE DELIVERY**

1. Lectures (L)
2. Tutorial (S)
3. Homework (HW) & Quiz (Q)

**REFERENCES**

* *Introductory to Statistics,* 9th Edition,Mann. S.Pream. Wiley, 2017.

**COURSE EVALUATION**

1. Mid-Term Exam : 30 %
2. Final-Term Exam : 30 %
3. Teaching Assessment : 40 %

**SUPPORTING MEDIA**

1. Textbook
2. Lecture notes
3. LMS

**COURSE OUTLINES**

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| Week | General Topic | LO | Week’s Learning Objective | Chapter Reference | Course Delivery | Course Evaluation | Supporting Media |
| *By the end of each week’s session, student will be able to:* |
| (1)  Aug 9, 2024 | Introduction | 1 | * What and Why Statistics * Population and sample * Descriptive and inferential Statistics * Type of Variables and Levels of Measurement | 1 | 1,2 | Q | 1,2 |
| (2)  Aug 16, 2024 | Presenting Data in Tables and Charts | 1,2 | * Frequency Table, Bar Chart, and Pie Chart * Frequency Distribution, Histogram, and Polygon | 2 | 1,2 | Q | 1,2 |
| (3)  Aug 23, 2024 | Numerical Descriptive Measures | 1,2 | * Central Tendency (mean, median, and mode) * Measure of Dispersion (range, Variance, and Standard Deviation) | 3 | 1,2 | Q | 1,2 |
| (4)  Aug 30, 2024 | Display and Explore Data | 1,2 | * Dot Plots * Stem and Leaf Display * Quartiles and Deciles * Box Plot * Coefficient of Skewness | 3 | 1,2 | Q | 1,2 |
| (5)  Sept 6, 2024 | Probability Concepts | 1 | * Classical, Empirical, and Subjective Probability * Addition and Multiplication Rules * Contingency Tables * Tree Diagram * Bayes’ Theorem * Permutation and Combination | 4 | 1,2 | Q | 1,2 |
| (6)  Sept 13, 2024 | Discrete Probability Distributions | 1,2 | * Mean, Variance, and Standard Distribution of Discrete Probability * Binomial Probability Distribution * Hypergeometric Probability Distribution | 5 | 1,2 | Q | 1,2 |
| (7)  Sept 20, 2024 | Review | . | * Recall and understand all the materials thus far | - | 1 | HW | 1 |

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| **(8)**  **TBD** | **Midterm Exam (Sept 23 ~ Oct 1)** | | | | | | |
| (9)  Oct 4, 2024 | Continuous Probability Distributions | 1,2 | * Uniform Distribution * Normal Distribution | 6 | 1,2 | Q | 1,2 |
| (10)  Oct 11, 2024 | Sampling Methods | 1,2 | * Methods to select a sample * Sampling error * Sampling distribution of the sample mean | 7 | 1,2 | Q | 1,2 |
| (11)  Oct 18, 2024 | The Central Limit Theorem | 1,2 | * Standard error of the mean * Probabilities of sampling possible outcome | 7 | 1,2 | Q | 1,2 |
| (12)  Oct 25, 2024 | Estimation and Confidence Intervals | 1,2 | * Confidence interval for a population mean * Confidence interval for a population proportion * Requires sample size | 8 | 1,2 | Q | 1,2 |

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| (13)  Nov 1, 2024 | One Sample Tests of Hypothesis | 1,2 | * Define Null and alternate hypothesis * Type I and II error * Test of hypothesis about a population mean * Test of hypothesis about a population proportion | 9 | 1,2 | Q | 1,2 |
| (14)  Nov 8, 2024 | Two Sample Tests of Hypothesis | 1,2 | * Hypothesis test about the difference between two population means * Hypothesis test about the difference between two population proportions. | 10 | 1,2 | Q | 1,2 |
| (15)  Nov 15, 2024 | Wrap-up | 3 | * Able to apply the knowledge thus far into a case. | **-** | 1 | A | 1,2 |
| **(16)**  **TBD** | **Final Exam (Nov 25 ~ Dec 6)** | | | | | | |

August 8, 2024

Prepared by Approved by



(Livia Janice Widiapradja, Ph.D.) (Sesaria Kiki Tamara, M.Sc.)

Faculty Member Head of Department