![SAGRADO - Universidad del Sagrado Corazón]

SYLLABUS

TITLE: Managerial Statistics

CODE: MCO 251

CREDITS: 3 credits | 45 hours contact |1 term

DESCRIPTION

An analysis of statistical inference and its practical applications to business scenarios. Major topics include: hypothesis testing and interval estimation, analysis of variance, regression analysis and time series analysis, variable association techniques, correlation, and simple and multiple linear regression applied to business problems, among other parametric and non-parametric techniques. More advanced statistical methods are presented in addition to the basic statistics and procedures learned in your introductory statistics course. Extensive use of statistical software, such as MS Excel, SPSS, or other applicable software, is made. This course is intended for Business Administration students and its main objective is to optimize their statistical thinking and for them to recognize statistics as part of problem solving and decision making.

JUSTIFICATION

Research is essential in the development of the business sciences in order to quantitatively and qualitatively manage the external and internal variables that affect the operation of organizations. The ability to survey market information allows the future manager to evaluate trends that will serve as a basis for the development of projections. This course enables students to handle the necessary statistical tools required in organizations during the research phase.

COMPETENCES

The course develops in the student the following competences:

- **Critical thinking**
- **Communication**

OBJECTIVES

At the end of the course, students will be trained to:

1. Demonstrate an understanding of statistical thinking and data analysis techniques for decision making in business settings.

2. Develop statistical programming skills for data management and interpretation.

3. Use, categorize, compare, and experiment with statistical concepts in applied research.

4. Handle parametric and nonparametric methods in hypothesis testing for decision making in business settings.

CONTENT

I. Study of Business Statistics

   A. Business Decision Making Tool
   B. Parameter Estimation and Accuracy
   C. Descriptive vs. Inferential Statistics
   D. Review of Probabilities, Variables, and Distributions
   E. Other Statistical Concepts

II. Sampling, Sample, and Confidence Intervals

   A. Sampling Method
   B. Sample Size Calculation
      a. Finite population
      b. Infinite population
   C. Estimation of Confidence Intervals

III. Significance Test

   A. Null and Alternate Hypothesis
   B. Type I and Type II Error
   C. Significance Decision using the P-Value

IV. Applications

   A. Parametric Methods
      1. Analysis of variance
      2. Difference of proportions analysis
      3. Regression and correlation analysis
         a. Scatter plots
         b. Correlation

        c. Simple linear regression
        d. Multiple linear regression
        e. Other parametric tests
  B. Non-Parametric Methods
     1. Binomial
     2. Chi-square
     3. Spearman
     4. Sign Test
     5. Mann-Whitney test
     6. Wilcoxon test
     7. Other non-parametric tests

METHODOLOGY

The following strategies of the active learning methodology are recommended:

- Problem-based learning
- Research-based learning
- Simulations
- Statistical programs
- Collaborative learning
- Exercises

EVALUATION

Partial exercises	25%
Compositions	25%
Participation	25%
Final evaluation	<u>25%</u>
Total	100%

LEARNING ASSESSMENT

The institutional assessment rubric is applied to the core activity of the course.

BIBLIOGRAPHY

Aczel, A. D. (2012) *Complete Business Statistics.* (8th Ed.)*.* Wohl Publishing, Inc.

Alwan, L. C., Craig, B. A. & McCabe, G. P. (2020) *The Practice of Statistics for Business and Economics.* (5th Ed.). W. H. Freeman.

Anderson, D. R., Sweeney, D. J., Williams, T. A., Camm, J. D. & Cochran, J. J. (2019)

Statistics for Business and Economics. (14th ed.). Cengage Learning.

Levine, D. M., Stephan, D. F. & Szabat, K. A. (2017) Statistics for Managers using

Microsoft Excel. (8th Ed.). Pearson Education, Inc.

More informational resources related to the course topics can be found on the library's website at http://biblioteca.sagrado.edu/.

REASONABLE ACCOMMODATION

For detailed information on the process and required documentation, visit the appropriate office. To ensure equal opportunities in compliance with the ADA (1990) and the Rehabilitation Act (1973), as amended, all students in need of reasonable accommodation services or special assistance must complete the process established by the Vice President for Academic Affairs.

ACADEMIC HONESTY, FRAUD, AND PLAGIARISM

Any student who fails to comply with the honesty, fraud, and plagiarism policy is subject to the following sanctions: receive a grade of zero on the evaluation and/or retaking of the seminar's work; a grade of F (*) in the seminar; suspension or expulsion as stated in the Academic Honesty Policy document (DAEE 205-001), which took effect in August 2005.