

## **SYLLABUS**

<b>TITLE:</b>	Management Statistics
<b>CODE:</b>	MCO 251
<b>PREREQUISITE:</b>	N/A
<b>CREDITS:</b>	3 credits   45 contact hours   1 term

### **DESCRIPTION**

Analysis of statistical inference and its practical applications to business scenarios. The main 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 nonparametric techniques. More advanced statistical methods are presented to the basic statistics and procedures learned in the introductory statistics course. Extensive use is made of statistical programs such as MS Excel, SPSS, or others. This course is aimed at Business Administration students and its main objective is to optimize their statistical thinking and recognize statistics as part of problem solving and decision making.

### **JUSTIFICATION**

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

### **COMPETENCES**

The course develops the following competences in students:

- **Critical questioning**
- **Communication**

## **OBJECTIVES**

After completion of the course, students will be able to:

1. Demonstrate an understanding of statistical thinking and data analysis techniques for business decision-making.
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 non-parametric methods in hypothesis testing for business decision making.

## **CONTENTS**

- 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
    1. Finite population
    2. Infinite population
  - C. Estimating 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. Proportion difference analysis
    3. Regression and correlation analysis
      - a. Dispersion diagrams

- b. Correlation
  - c. Simple linear regression
  - d. Multiple linear regression
- 4. Other parametric tests
- B. 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 from the active learning methodology are recommended:

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

## **EVALUATION**

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

## **LEARNING ASSESSMENT**

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

## **BIBLIOGRAPHY**

Aczel, A. D. (2012). *Complete Business Statistics*. (8<sup>th</sup> ed.). Wohl Publishing, Inc.

Alwan, L. C., Craig, B. A., & McCabe, G. P. (2020). *The Practice of Statistics For Business And Economics*. (5<sup>th</sup> 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*. (14<sup>th</sup> ed.). Cengage Learning.

Levine, D. M., Stephan, D. F., & Szabat, K. A. (2017). *Statistics for managers using Microsoft Excel*. (8<sup>th</sup> ed.). Pearson Education, Inc.

For more information resources related to the course's topics, access the library's webpage <http://biblioteca.sagrado.edu/>

## **REASONABLE ACCOMMODATION**

For detailed information on the process and required documentation you should visit the corresponding office. To ensure equal conditions, in compliance with the ADA Act (1990) and the Rehabilitation Act (1973), as amended, any student in need of reasonable accommodation or special assistance must complete the process established by the Vice Presidency for Academic Affairs.

## **ACADEMIC INTEGRITY**

This policy applies to all students enrolled at Universidad del Sagrado Corazón to take courses with or without academic credit. A lack of academic integrity is any act or omission that does not demonstrate the honesty, transparency, and responsibility that should characterize all academic activity. Any student who fails to comply with the Honesty, Fraud, and Plagiarism Policy is exposed to the following sanctions: receive a grade of zero in the evaluation and / or repetition of the assignment in the seminar, a grade of F (\*) in the seminar, suspension, or expulsion as established in the Academic Integrity Policy effective in November 2022.

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