Course Syllabus and Learning Objectives

ISOMS220 – Business Statistics 2



**Semester: Fall­­\_2023-2024**

**Instructor: Prof. Shaarawy, Samir**

**Textbook:**  **Essentials of Business Statistics**

  **Edition :** 5th Edition

 **Authors:**  Bruce L. Bowerman, Richard T. O’Connell,

Emily S. Murphree, J. B. Orris

 **Publisher:**  McGraw-Hill - Irwin

**Prerequisites:** ISOM120

# Course Description

Provides a comprehensive coverage for inferential statistics that are needed for analyzing business data.

Topics include confidence intervals, hypothesis testing, correlation, simple and multiple linear regression

# Course Learning Objectives (CLOs)

**Upon successful completion of the course, students will be able to**:

1. Understand the concept of sampling and sampling distributions
2. Construct and interpret confidence intervals
3. Understand and perform hypothesis testing
4. Perform statistical inference based on two samples
5. Understand the principal of experimental design
6. Test the independence of two qualitative variables
7. Apply simple and multiple regression analysis to solve business problems

**Course Content:**

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| **Chapter 6: (Review) Normal Distribution** |  **3 Videos on Teams** |
| **Chapter 7: Sampling and Sampling Distribution** Random Sampling, Sampling Distribution of the Sample Mean, Sampling Distribution of the Sample Proportion |  **sections : 1, 2, 3**  |
| **Chapter 8: Confidence Intervals** Z-Based Confidence Intervals for a Population Mean: σ Known, t-Based Confidence Intervals for a Population Mean: σ Unknown, Sample Size Determination, Confidence Intervals for a Population Proportion |  **sections : 1 to 4**  |
| **Chapter 9: Hypothesis Testing** The Null and Alternative Hypotheses and errors in Hypothesis, Testing, Z Tests about a Population Mean: σ Known, t Test about a Population Mean: σ Unknown, Z Test about a Population Proportion, The Chi-Square Distribution, Statistical Inference for a population Variance |  **sections : 1 to 4 and 6 to 7**  |
| **Chapter 10: Statistical Inference Based on Two-Samples** Comparing Two Population Means by Using Independent Samples, Paired Difference Experiments, Comparing Two Population Variances by Using Independent Samples |  **sections : 1 to 5**  |
| **Chapter 11: Experimental Design and Analysis of Variance** One-Way Analysis Of Variance |  **sections : 1 and 2**  |
| **Chapter 12: Chi-Square Tests** A Chi-Square Test for Independence |  **section : 2**  |
| **Chapter 13: Simple Linear Regression Analysis** The Simple Linear Regression Model and the Least Squares Point Estimates, Testing the Significance of the Slope, Confidence Intervals, Simple Coefficients of Determination and Correlation, An F Test for the Model |  **Sections :1 to 5 and 7**  |
| **Chapter 14: Multiple Regression and Model Building** The Multiple Regression Model and the Least Squares Point Estimates, Model Assumptions and the Standard Error, and Adjusted , Testing the Significance of an Independent Variable, Confidence Intervals  |  **sections : 1 to 6**  |