NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY
BUS 220 - INTRODUCTION TO BUSINESS STATISTICS (3 CR.)

Course Description

This course covers frequency distributions, descriptive measures, probability concepts, probability distribution, sampling, estimation, hypotheses testing for means and proportions, simple regression and correlation. Lecture 3 hours per week.

General Course Purpose

In this course, the student is introduced to the subject of business statistics to include the need for quantitative analysis in business, the basic procedures in problem solving, and the sources and types of data used by business firms. Basic probability concepts and normal probability distribution will be used by the student to solve problems which involve business applications. In addition, hypothesis testing and simple regression analysis are introduced.

Course Prerequisites/Corequisites

None.

Course Objectives

Upon completion of the course, the student should be able to achieve the objectives as identified under each topic below:

A. Organizing and Displaying data
   1. organize ungrouped data into a frequency distribution
   2. construct different types of graphs using statistical software

B. Descriptive Measures
   1. arrange ungrouped data into an array, and determine the mean, median, mode, percentiles and quartiles
   2. for a given data, compute the range, variance, and standard deviation
   3. recognize the shape of the distribution—symmetric and asymmetric
   4. generate summary statistics using statistical software

C. Basic Probability Concepts
   1. define experiment, sample space
   2. list elementary events
   3. construct Venn diagram and probability matrices for two sets probability problems
   4. solve problems involving use of addition rule
   5. define independent events and dependent events
   6. solve problems involving use of multiplication rule
   7. compute conditional probabilities

D. Discrete Probability Distributions
   1. compute mean (expected value) and variance of a discrete random variable
   2. state the required conditions for the use of the binomial probability distribution
   3. compute mean (expected value) and variance of a binomial distribution
   4. with the use of formula and table, solve problems involving binomial distribution

E. Continuous Probability Distribution
   1. describe the characteristics of normal distribution and standardized normal distribution

2. solve problems finding areas under a normal curve using a z-table
3. approximate normal to the binomial distribution
4. demonstrate the use of the normal distribution in business problem solving

F. Sampling and Sampling Distributions
1. distinguish between probability and non-probability sampling
2. recognize what is meant by simple random, systematic, stratified, and cluster samples
3. define sampling distribution of the mean, and state the central limit theorem and its significance
4. write the formulas for and compute the standard error of the mean and the standard error of the proportion

G. Confidence Intervals for Single Population Mean and Proportion
1. know the difference between point estimates and interval estimates
2. calculate confidence intervals for mean and proportion
3. compute appropriate sample size
4. construct confidence interval using statistics package

H. Hypothesis Testing for Single Population Mean and Proportion
1. state null and alternative hypothesis
2. calculate cut-off point using z-table, t-table
3. calculate observed value using appropriate distribution (z-distribution, t-distribution)
4. reach conclusion of the testing

I. Simple Regression and Correlation
1. calculate Pearson correlation coefficient
2. construct line fit plots and residual plots using statistical package
3. interpret R_2 and slope of the regression line
4. run and interpret the output

Major Topics to be Covered

- Organizing and displaying data
- Measures of central tendency and variability
- Basic probability concepts and problems
- Use of probability distributions: Binomial distribution and use of the normal distribution
- Sampling and sampling distributions
- Confidence intervals for the population mean and proportion using normal distribution
- Basic hypothesis testing
- Simple Regression analysis using statistical package

Optional Topics

- Poisson Distribution
- Uniform Distribution