Course Outline

Economics
School of Business & Economics

BUSN 5010 - **3.00** - Academic

Managerial Statistics

Rationale

To make minor changes in course topics, learning outcomes and calendar description.

Calendar Description

Students examine the statistical methods and tools required for decision making in today's business environment. Topics include descriptive statistics and numerical measures, statistical inferences with two populations, hypothesis tests and nonparametric methods, analysis of variance, simple regression models, multiple regression models, regression and the model building process, regression models with categorical dependent variables and applied models with categorical dependent variables.

Credits/Hours

Course Has Variable Hours: No
Credits: 3.00
Lecture Hours: 3.00
Seminar Hours: 0
Lab Hours: 0
Other Hours: 0
Clarify:
Total Hours: 3.00
Delivery Methods: (Face to Face)
Impact on Courses/Programs/Departments: None
Repeat Types: A - Once for credit (default)
Grading Methods: (G - Graduate Programs)

Educational Objectives/Outcomes

1. Summarize, tabulate, plot, and professionally present raw data for a target audience including measures of location, relative location, variability, and association between two variables.
2. Apply a variety of probability distributions in different areas of business.
3. Construct interval estimates for a variety of hypothesized parameters.
4. Set up, develop, and test hypothesized parameters including distribution-free methods.
5. Analyze and test data out of experimental designs and observational data.
6. Build, estimate, test, and interpret possible existing relationships between two variables, using simple regression analysis.
7. Build, estimate, test, and interpret possible existing relationships among more than two variables, using multiple regression analysis.
8. Deal with major issues including transformations and interactions in regression models.
9. Build and estimate regression models with qualitative (categorical) dependent variable.

Prerequisites

Admission to the GDBA or MBA or approval of degree committee

Co-Requisites

Recommended Requisites

Exclusion Requisites

BUSN 5011-Managerial Statistics

GBUS 5010-Applied Statistics

Texts/Materials

Textbooks

1. **Required** Anderson, D. R., Sweeney, D. J., Williams, T. A., Camm, J. D., & Cochran, J. J. *Statistics for Business and Economics*, 12th ed. Mason, OH: South-Western, 2014
Other

1. **Recommended**
Pardoe (2006), Applied Regression Modeling, A Business Approach, Chapter 6: Two Case Studies on Home Prices, and Vehicle Fuel

Hill, Griffiths, and Lim (2011), Principles of Econometrics, 4th Edition, Willey & Sons, pp 273–275.

Wilson, J.H., & Keating, B. (2009), Business Forecasting with ForecastX (6th ed). Chapter 5: Forecasting Gap Sales Data with Multiple, pp 147-148.

Student Evaluation

The Course grade is based on the following course evaluations.

Class participation (5.00%) Quizzes (10.00%) Case or project (20.00%) Assignments (25.00%) Final exam (40.00%)
Students must pass the final exam with 50% or higher to pass the course.

Course Topics

1. Descriptive Statistics and Numerical Measures

   - Summarizing quantitative data
   - Cross tabulations and scatter diagrams
   - Measures of location and variability
   - Measures of distribution shape, relative location, and detecting outliers
   - Measures of association between two variables

2. Probability and Probability Distributions

   - Basic relationships of probability
   - Binomial probability distribution
   - Poisson probability distribution
   - Normal probability distribution
   - Exponential probability distribution

3. Statistical Inferences About Two or More Populations

- Sampling distribution of sample means, variances, and proportions
- Margin of error and interval estimates
- P-value and critical approaches

4. Hypothesis Tests and Nonparametric Methods

- Developing null and alternative hypotheses
- Test of hypotheses about two populations means, variances, and proportions
- Nonparametric Wilcoxon Signed-Rank Test
- Nonparametric Mann-Whitney-Wilcoxson test
- Nonparametric Kruskal-Wallistest
- Rank correlation

5. Analysis of Variance (ANOVA)

- Completely randomized design- type i
- Randomized block design-type ii
- Factorial experiment-type iii

6. Simple Regression Models

- Regression model and regression equation
- Estimated regression equation
- Coefficient of determination
- Regression model assumptions
- Testing for significance
- Confidence and prediction intervals
- Residual analysis: validating model assumptions
- Outliers

7. Multiple Regression Models

- Multiple regression model and regression equation
- Estimated multiple regression equation
- Coefficient of determination
- Multiple regression model assumptions
- Testing for significance
- Confidence and prediction intervals

8. Regression and the Model Building Process

- Categorical independent variables
- Modeling curvilinear relationships
- Interaction
- Transformations
- Variable selection procedures

9. Models with Categorical Dependent Variables

- Linear probability model
- Logit regression equation
- Interpreting the logistic regression equation
- Logit transformation

Methods for Prior Learning Assessment and Recognition

Students can apply for PLAR but it cannot be used to meet the program residency requirment.

Last Action Taken

Implement by Graduate Studies Committee Chair Debbie (Proxy GSC Chair) Krebs