

**Rider University**  
**College of Business Administration**  
**Department of Information Systems and Supply Chain Management**  
**PMBA 8051 Fundamentals of Statistical Analysis**  
**Minimum Common Syllabus (Required Topics)**

I. Descriptive Statistics

- A. Graphical display of data
- B. Numerical measures of location, dispersion and relative standing

II. Probability

- A. Core Probability Rules
- B. Conditional Probability and Independence
- C. Bayes' theorem

III. Random Variables

- A. General notions for discrete and continuous random variables
- B. The Binomial random variable
- C. The Poisson random variable
- D. The Normal random variable

IV. Sampling Distributions

- A. General notions
- B. The sampling distribution of the sample mean
  - a. The mean, variance and standard deviation of the sample mean
  - b. The Central Limit Theorem
- C. The sampling distribution of the sample proportion

V. Statistical Inference

- A. Estimation
  - a. General concepts of point and interval estimators
  - b. Estimation of the mean of one population (both large and small sample cases)
  - c. Estimation of the proportion of one population (large sample case only)
- B. Hypothesis Testing
  - a. General concepts of hypothesis tests
  - b. Testing the mean of one population (both large and sample cases)
  - c. Testing the proportion of one population (large sample case only)

## VI. Simple Linear Regression

- A. Simple linear regression model
- B. Least Square Method
- C. Coefficient of Determination
- D. Model assumptions and diagnostics
- E. Testing for significance
- F. Using the estimated regression equation for estimation and prediction

## VII. Multiple Regression

- A. Multiple regression model
- B. Estimation and interpretation of regression coefficients
- C. Multiple Coefficient of Determination
- D. Model assumptions and diagnostics
- E. Testing for significance
  - a. F Test
  - b. t Test
  - c. Multicollinearity
- F. Categorical independent variables
- G. Using the estimated regression equation for estimation and prediction

### Reference Texts:

- *Essentials of Statistics for Business and Economics*, Seventh Edition, by Anderson et al. Cengage Learning.
- *Basic Statistical Ideas for Managers*, Second Edition, by Hildebrand, Ott, and Gray. Thomson Learning