BAKER COLLEGE
STUDENT LEARNING OUTCOMES

MTH 6710 Statistical Modeling
4 Semester Credit Hours

Student Learning Outcomes and Enabling Objectives

1. Determine data collection methods.
    a. Access existing source data from the raw state.
    b. Evaluate surveys used to collect data.
    c. Evaluate experimental studies used to collect data.

2. Demonstrate methods used to summarize data.
    a. Apply methods used to describe data on a single variable.
    b. Apply methods used to describe data on more than one variable.
    c. Demonstrate the use of software to describe data.
    d. Determine appropriate visual representations to display information in real world situations.

3. Explain how probability distributions are used to model data.
    a. Apply basic probability theory and rules.
    b. Characterize discrete probability distributions (binomial and Poisson).
    c. Characterize continuous probability distributions (normal, Student's t, chi-square, and F-distribution).
    d. Write statements or conclusions that are based on uncertainty.

4. Make inferences using data analysis.
    a. Interpret output from statistical tools.
    b. Make inferences through estimation about population parameters (mean, proportion and variance).
    c. Make inferences through estimation comparing two population parameters (mean and proportion).
    d. Make inferences through estimation comparing more than two population parameters using analysis of variance methods.
    e. Make inferences using the chi-square test for independence.

5. Develop a data model.
    a. Construct linear regression and correlation models.
    b. Apply multiple comparison methods (ANOVA, Tukey HSD).
    c. Apply multiple regression and the general linear model.

d. Make predictions using logistic regression.

Big Ideas and Essential Questions

Big Ideas

- Data Collection Methods
- Summarize Data
- Probability Distributions
- Analyze Data
- Statistical Models

Essential Questions

1. How do I manage data?
2. How can I make decisions based on data?
3. How can I use probability models to understand uncertainty?
4. What inferences can be deduced from data analysis?
5. How do I develop a statistical model for a real-world situation?

These SLOs are not approved for experiential credit.

Effective: Fall 2024