Course Description for Math 267: Data Analysis and Probability.

Credit 3 hours. Prerequisite: Math 167. This course is designed to introduce and develop the basic concepts of probability and data analysis, and to examine the role of probability in statistical thinking. Topics include probability, data collection and representation, measures of central tendency and variability, the normal curve, standard scores, correlation and regression, and the use of statistics in making predictions and generalizations. A graphing calculator is required in this course. Note: the pedagogical techniques modeled in this course are especially useful for students interested in teaching in the K-8 curriculum.

Goal:

The overall goal of this course is to develop future elementary teachers who have an in-depth understanding of the important basic concepts of probability and data analysis, and can successfully communicate and apply this knowledge.

Objectives:

Students who successfully complete this course will be able to demonstrate their understanding by working problems and in-class presentations which include: basic concepts relative to probability, problem solving, data collection, data representation, and data analysis. Specifically, students who successfully complete this course will be able to

Each objective is coded with the COEHD Conceptual Framework (CK=content knowledge; KL=knowledge of learner; SM= strategies and methods; PS=professional standards; T=technology; D=diversity).

- accurately compute probability of events and simulate with well-designed probability experiments (CK, PS, T)
- provide clear and concise descriptions of data sets using statistical tools such as stem and leaf plots, bar graphs, histograms, pie charts, box and whiskers plots (CK, PS, T)
- provide clear and concise descriptions of data sets using important statistical quantities such as mean, mode, median, range, standard deviation, interquartile range, percentiles (CK, T)
- accurately interpret data in order to make predictions/decisions (CK, SM, PS, T)
- describe the general attributes of various distributions of data (CK)
- recognize and in-depth analyze data sets described by a normal distribution (CK, T)
• solve and clearly explain problems found in the homework exercises; display flexibility and often finds multiple approaches to a given task/problem; display a command of deductive reasoning (CK, PS, KL, SM, T, D)
• display positive attitude towards mathematics and exhibits the intellectual habits of mathematicians (PS)