MAT 208 Elementary Biostatistics

Course Credit: 3 semester hours

Course Description: A study of elementary statistics for students in health-related majors with an introduction to probability. Emphasis is placed on student understanding and interpretation of statistical data and computation using calculators and computers.

Rationale: Statistics is the basic mathematical tool for drawing certainty from uncertainty. Public policy, the availability of new drugs, the development of new products, comparisons of teaching effectiveness, and quality control in production are based on statistical analysis. The study of statistics develops a set of cognitive and technical skills which include thinking analytically, defining and solving problems, and collecting and analyzing and interpreting data. This course helps college students understand the basic vocabulary and principles of statistics, particularly as they are applied to the field of public health, needed in order to skillfully discern truth in presentations of information.

Prerequisites: none

Learning Objectives: Upon successful completion of this course, the student will be able to correctly define and use statistical terms, draw and interpret graphs of various types, compute measures of central tendency, dispersion, and position, use probability as a tool in statistical evaluation, understand and apply the Central Limit Theorem, estimate population parameters using confidence intervals, test claims using hypothesis testing, compute correlation and best-fit lines for paired data, and explain how statistics are used in a variety of public health situations.

Instructional Procedures/Techniques:
The method of instruction may include lecture, group problem solving, individual problem solving, demonstrations, computer lab assignments, quizzes and examinations.

Outline of Topics:
- Types of data and collecting sample data
- Frequency distributions and graphs
- Measures of central tendency
- Measures of variation and relative standing
- Probability
- Combinatorics
- Binomial probability distribution
- Normal probability distribution
- Central limit theorem
- Estimating a population proportion, mean, and standard deviation
- Testing a claim about a proportion, mean, and standard deviation
- Confidence interval and hypothesis testing for two samples
- Correlation and regression

Materials Required:
Text: Biostatistics for the Biological and Health Sciences by Triola, Triola, Roy, 3rd ed.

Calculator: TI-84

Attendance and Make-up tests: Any student whose absences, whether excused or unexcused, accumulate to 12 in semester classes meeting 3 times per week or 8 in semester classes meeting 2 times per week or 4 in semester classes meeting once a week automatically receives a grade of F in the course. The responsibility for missed work rests entirely with the student.

Academic Integrity: Students are expected to do their own work. Refer to the following website: www.mc.edu/publications/policies/219.html.