Course Title: Quantitative Reasoning

Course No: MAT 108 No. of Credits 3

Contact hrs/wk: Lecture 3 Lecture/Discussion Lab

Course Prerequisites: A course in plane geometry and one of the following:
a) Two years of high school algebra
b) A grade of C or better in MAT 105
c) Course(s) equivalent to a) or b).

Catalog description: This course is intended to develop analytic reasoning and the ability to solve quantitative problems. Topics to be covered include construction and interpretation of graphs, functional relationships, descriptive statistics, geometry and spatial visualization, math of finance, exponential growth, and basic probability. Appropriate use of units and dimensions, estimates, mathematical notation and available technology will be emphasized throughout the course.

Course content (list of topics normally covered).

1. Units and unit conversions
2. Methods of representing functions including graphs, formulas and tables.
3. Geometry and spatial visualization, including perimeter, area, volume, as well as a brief development of the basic trigonometric functions
4. Mathematics of finance including simple, compound and continuously compounded interest, annuities, types of loans with the time value of money as a unifying theme
5. Exponential growth and decay. Logarithms will be developed as needed
6. Basic probability including independence, developed on an informal level
7. Descriptive statistics including sampling methods, experiments, charts and tables, and the concepts and some measures of center and variability.
   8. Numerical concepts and estimation including percentages, scientific notation and significant digits
9. At least two more topics selected from the following:
   - Fitting a curve to a data set, linear regression, curves based on data
   - The use of two and three-dimensional coordinate systems and the concept of a vector.
   - Linear and exponential modeling
   - Surface area of geometric figures
   - Standard deviation or other additional topics in statistics or probability

Content-based department proficiencies:

The successful student will understand:
- Basic concepts of unit conversion
- Elementary practical applications of exponential growth and decay models, including compound interest
- Elementary applications of descriptive statistics
- The general ideas which support the concepts of center and variability of data
Colleges-wide proficiencies assigned to course:

Students should be able to demonstrate the following:

A. Analytical skills Performance Indicators: Students should be able to:
1. Interpret and synthesize information and ideas.
4. Select and apply scientific and other appropriate methodologies.

B. Quantitative skills Performance Indicators: Students should be able to:
1. Solve quantitative and mathematical problems.
2. Interpret graphs, tables, and diagrams.

Representative textbooks used for the courses:

- Using and Understanding Mathematics- Bennett and Briggs, Pub: Addison-Wesley

Approved April 22, 2006