

## ***QUANTITATIVE REASONING (Q)***

### ***GENERAL EDUCATION GOALS AND OBJECTIVES***

#### **PREFATORY STATEMENT**

The purpose of the quantitative reasoning requirement is to provide students with the skills of reasoning and logic necessary for success in our modern world.

#### **Goal**

Students will construct statements about quantities, which are valid under the standards of logic and mathematics. Similarly, students will be able to identify logical and mathematical flaws.

#### **Objectives: All students will**

1. use mathematics to communicate ideas. Examples include:
  - a. constructing a report to support an argument using mathematical reasoning
  - b. deriving theorems from axioms or solving problems from assumptions
  - c. describing the relationship between phenomena and mathematical systems
  - d. interpreting mathematical information (e.g., measures of central tendency and dispersion in descriptive statistics)
  
2. use mathematical, quantitative or statistical models (i.e., ones based on an axiomatic system) for concrete or abstract problem solving or decision making. Examples include:
  - a. critiquing the strengths and weaknesses of the fit of data to a mathematical model
  - b. critiquing observations from an experiment with a model based on the assumptions of that experiment
  - c. explicating a model based upon axioms derived from physical, economic, computational or behavioral observations
  - d. identifying a problem, formulating a model for the problem, and using that model to solve the problem
  - e. analyzing statements made about a mathematical model including its application to problems, validity to other systems and its use of data.