

## Request for Quantitative Thinking Designation for a Transfer Course

Many policy debates, scientific discussions, political issues, and personal and organizational decisions involve judgments about claims based upon quantitative evidence. To critically evaluate these claims, the individual must have basic familiarity with such concepts as counting, measurement, estimation, and data analysis. Equally important is the capacity to ask and answer questions in a manner appropriate to these quantitative tools and to understand when the use of quantitative tools is or is not appropriate. The purpose of the QT requirement is to ensure that students have the opportunity to develop such skills. Students should learn approaches to collecting, interpreting, and presenting information about the world based on numerical, logical, and statistical skills. These topics arise in a wide range of areas, and we invite faculty from a range of disciplines to teach courses that contribute to QT.

Macalester courses are evaluated for meeting the QT requirement by the degree to which they meet the six specific learning goals described below. Such courses carry one of the following three designations.

**Q1.** Fulfills the Quantitative Description goal, plus 1-2 other learning goals.

**Q2.** Fulfills the Quantitative Description goal, plus 3-4 other learning goals.

**Q3.** Fulfills the Quantitative Description goal, plus 5-6 other learning goals.

### *Learning Goals for Quantitative Thinking Courses*

**Quantitative Description.** All Quantitative Thinking designated courses must enable students to accomplish the two learning outcomes associated with the requirement's Quantitative Description goal. The two Quantitative Description learning outcomes are: 1) Describe objects and/or events quantitatively in terms of their number, probability, proportion, frequency of occurrence, price volume, weight, etc.; 2) Use basic skills such as arithmetic, algebra, geometry, statistics and/or logic to examine the relationships between variables.

**A. Visualization.** 1. Interpret common visual presentations of data (e.g., graphs, charts, maps) accurately and critically; 2. Create clear and accurate visual depictions of data

**B. Quality of data.** 1. Locate or create data appropriate to the question being addressed; 2. Describe potential limits to a research study's validity based either on how well the sample represents the total population (i.e., recognizing potential sources of biases and/or error within a data collection process) or on the fit between the study's variables and the phenomena it seeks to illuminate (i.e., construct validity)

**C. Association and causation.** 1. Know the different ways that factors identified in research findings can be linked (e.g., correlation, causation); 2. Critically assess the strengths and limitations of research findings involving linkages between factors (e.g., identify cases where correlations might not provide evidence of causality due to "lurking" or confounding variables)

**D. Trade-offs.** 1. Apply techniques to quantify the trade-offs associated with phenomena such as time life expectancy, money, risk, scientific measurement, or environmental quality; 2. Demonstrate knowledge of the strengths and limitations of trade-off quantification as a tool for decision-making

**E. Uncertainty.** 1. Generate and apply probabilistic information to decision-making; 2. Explain the limits of probabilistic information

**F. Estimation and scale.** 1. Use scale to place quantities in context; 2. Generate reasonable rough estimates based on readily available data

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Please read the cover page of this form and reflect on the degree to which the course for which you are requesting quantitative thinking designation addressed the Quantitative Description and six other learning goals of the quantitative thinking requirement. Then complete all items on this form and submit it to the Registrar's Office.

Your Name: \_\_\_\_\_ Date: \_\_\_\_\_

College or University: \_\_\_\_\_ Dept: \_\_\_\_\_ Course No.: \_\_\_\_\_

Course Title: \_\_\_\_\_

Instructor: \_\_\_\_\_ Semester and Year Taken: \_\_\_\_\_

Brief Course Description:

Indicate the intended "Q" designation of the course:

- Q1.** Fulfills the Quantitative Description goal, plus 1-2 other learning goals.
- Q2.** Fulfills the Quantitative Description goal, plus 3-4 other learning goals.
- Q3.** Fulfills the Quantitative Description goal, plus 5-6 other learning goals.

Please list which of the six learning goals (identified by letter) were substantially addressed in this course:

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Please provide specific examples below of how these goals and the Quantitative Description goal were addressed (attach an additional sheet if necessary). Provide a copy of the course syllabus if available.