

Proposal for Quantitative Literacy

Four hours of content directed toward the development of numerical skills in quantitative literacy and reasoning skills, at a level beyond that required for admission to the University, should be required of all students in their general education. This content must focus on mathematics, exploratory data analysis, statistics, probability, or modeling, and could be linked with a Perspective theme (although the hours would not count towards the hours in the particular theme or total Perspective hours). Advanced placement or transfer credit may satisfy this requirement.

General Education Objectives for Quantitative Literacy:

I. Thinking Critically and Creatively

- A. Recognize, differentiate, and effectively employ appropriate and increasingly sophisticated strategies to collect and interpret quantitative information;
- B. Successfully integrate quantitative and non-quantitative concepts and information when interpreting, solving problems, evaluating, creating, and making decisions;
- D. Construct persuasive arguments in increasingly complex contexts;
- E. Apply quantitative skills to a variety of disciplines and advance convincing reasons to connect as well as differentiate theories from different domains of knowledge.

II. Communicating Effectively

- B. Use representations of quantitative information effectively to discover and develop ideas and to articulate positions in contexts of increasing complexity;
- D. Determine the scope of quantitative information needed in specific research contexts and successfully identify, locate, evaluate, use, and communicate quantitative information from various media;
- F. Know, apply, and communicate college-level quantitative concepts and methods;
- G. Select and use hardware, software applications, databases, and other technologies effectively for both inquiry and communication of quantitative information.

IV. Understanding Responsibilities of Community Membership

- C. Collaborate effectively with others in shared processes of inquiry and problem solving;

Common expectations – students should be able to:

1. Recognize situations where quantitative methods can be used to model and solve problems, and employ appropriate tools (specifically technology) in formulating, analyzing and solving those problems.
2. Demonstrate number sense, recognize quantitatively reasonable and unreasonable solutions to problems, and to use estimations to make decisions from quantitative information.

3. Collect quantitative data and interpret based on statistical studies, understand the role of chance in data collection and statistical inference, question and validate assumptions, identify potential sources of error, and recognize statistical fallacies.
4. Develop skill in forming generalizations from recognized patterns in numerical and spatial information, and in forming sound arguments using quantitative information.
5. Express ideas and concepts of quantitative literacy orally and in writing using a variety of representations, including numerical, graphical, and algebraic representations.
6. Recognize and draw upon connections between the mathematical sciences and other disciplines, and between the mathematical sciences and life experiences.

Quantitative literacy is best developed in stages with increasing levels of complexity and culminating with specific applications across disciplines and in the major discipline. Thus, second and subsequent levels, if appropriate, should require application, refinement, and reflection upon the quantitative skills and methods developed in the initial content. Goals of this experience could include the goals listed above. Insightful understanding of quantitative information and the ability to transfer understanding between contexts would indicate highest levels of achievement.

For more information, see the General Education Task Force website:
http://www1.appstate.edu/orgs/gen_ed/