

Mathematics/Quantitative Literacy Competency Assessment Plan

May 2002

**Institution: University of Virginia—College of Arts and Sciences,
School of Architecture, School of Commerce, and School of
Education**

Standards/Definition of Mathematics/Quantitative Literacy Competency

The University of Virginia expects graduates of its College of Arts and Sciences and its Schools of Architecture, Commerce, and Education to have and to understand basic knowledge and skills about mathematics and/or quantitative literacy in order to use it effectively and productively for their own purposes. Specifically, we expect these graduates to be able to apply simple mathematical methods to the solution of real-world problems. We believe a quantitatively literate graduate should be able to:

1. Interpret mathematical models such as formulas, graphs, tables, and schematics, and draw inferences from them.
2. Represent mathematical information symbolically, visually, numerically, and verbally.
3. Use arithmetical, algebraic, geometric, and statistical methods to solve problems.
4. Estimate and check answers to mathematical problems in order to determine reasonableness, identify alternatives, and select optimal results.
5. Recognize that mathematical and statistical methods have limits.¹

Description of Measure to be used

The College of Arts and Sciences and the other schools listed do not require a specific course or courses in mathematics or quantitative reasoning. Rather, there are requirements in science and mathematics with students being able to choose the course or courses in which they wish to enroll. Our experience, based on statistics from the graduating undergraduate class of May 2001, is that 86% of the 2001 graduates of the College of Arts and Sciences have completed a course in mathematics or statistics or have received credit for an advance placement or transfer course in one of these areas. In the School of Architecture, the comparable figure is 98%, and in the School of

¹ This definition is excerpted in part from *Quantitative Reasoning for College Graduates: A Complement to the Standards*, Mathematical Association of America, 1996. http://www.maa.org/past/ql/ql_toc.html.

Commerce, 100%. We do not have comparable figures for graduates of the School of Education, which enrolls only a small number of undergraduates. In addition, many undergraduates complete courses dealing with quantitative reasoning taught in other departments. In light of the nature of our curriculum, it is not possible to do course-embedded assessment of quantitative literacy. Instead, we intend to administer the “Collegiate Assessment of Academic Proficiency” (CAAP) test in mathematics/quantitative literacy to a random sample of fourth-year undergraduates in the four schools listed above to determine the extent to which students have mastered the skills described above. The American College Testing Service (ACT) has developed the CAAP tests for assessment exercises such as this, and we believe the CAAP test will provide us a good reading on the extent to which undergraduates are achieving the goals listed above. Moreover, results of this test will provide information on the competency levels of our students in comparison with students at other institutions using the same test. It is the University’s intention to conduct an assessment of mathematics/quantitative literacy of its students every three years beginning with the 2002-03 academic year. The University intends to evaluate the success of using the CAAP test for this purpose before making a decision on whether or not to continue using this test in future competency assessments.

Description of the Administration Process

Administration of the CAAP tests to fourth-year students will take place at various times throughout the 2002-2003 academic session. The Office of Institutional Assessment and Studies will choose a random sample of not fewer than 5% of the fourth-year class. Students will be able to choose a convenient time and place for taking the test. We estimate that each assessment will require about one hour of each student’s time. Staff of the Office of Institutional Assessment and Studies will administer the tests.

The Office of Institutional Assessment and Studies will assure that students are able to take the test anonymously. Students will be assigned a randomly selected ID number, not associated with their University ID number, for testing purposes. The ACT will grade the tests, and will report the scores to the University in an aggregate format. At no time will student names be associated with test scores, and no report of test results using student names will be made.

Preliminary proposal about how results of the competency assessments will be described in a way that will be meaningful to the various publics with a stake in the quality of Virginia higher education

The University will describe the mathematics/quantitative literacy assessment results as follows:

1. A description of the expectations for student competence in mathematics/quantitative literacy.

2. A description of the assessment process.
3. A description of the aggregate results on the CAAP tests as provided to the University by the ACT including, if possible, results by School and comparative data with other institutions.

Submitted by: _____
Vice President and Provost