

Here are the detailed results of the CCSU vote on the SLOs, with explanations for rejection based on the discussion at the Senate meeting.

The following SLOs were **APPROVED**:

Written Communication

Oral Communication

Scientific Knowledge and Understanding

Historical Knowledge and Understanding

Social and Behavioral Sciences

Arts and Humanities

Continuing Learning/Information Literacy

The following SLOs were **NOT APPROVED**:

Scientific Reasoning

Quantitative Reasoning

The reasons for rejection are summarized as follows:

2012 Scientific Reasoning SLOs

1. Explain the methods of scientific inquiry that lead to the acquisition of knowledge. Such methods include observations, **testable hypotheses**, logical inferences, experimental design, data acquisition, interpretation, and reproducible outcomes.
2. Apply scientific methods to investigate real-world phenomena, and routine and novel problems. This includes data acquisition and evaluation, and prediction.
3. Represent scientific data symbolically, graphically, numerically, and verbally.
4. Interpret scientific information and draw logical references from representations such as formulas, equations, graphs, tables, and schematics.
5. Evaluate the results obtained from scientific methods for accuracy and/or reasonableness.

Proposed Scientific Reasoning SLOs

1. Apply scientific methods to investigate phenomena of the physical or natural world through prediction, observation or experimentation, data acquisition, and evaluation.
2. Represent and report scientific data symbolically, graphically, or numerically.
3. Interpret and evaluate scientific data in order to draw reasonable and logical conclusions.

The Faculty Senate at CCSU did not support the proposed SLOs due to the omission of several words from the current SLOs that express important components of the scientific method; in particular, the fact that hypothesis testing is nowhere mentioned is considered quite problematic. In this age where scientific misinformation is rampant on the internet and elsewhere, we believe that community college and university students deserve a rich scientific experience in which they learn about all aspects of the scientific method, and get a chance to practice the use of the scientific method in their courses, including at least one laboratory science course.

2012 Quantitative Reasoning SLOs

1. Represent mathematical, and quantitative information symbolically, graphically, numerically, and verbally.
2. Apply quantitative methods to investigate routine and novel problems. This includes calculations/procedures, mathematical and/or statistical modeling, prediction, and evaluation.

3. Interpret mathematical and quantitative information and draw logical inferences from representations such as formulas, equations, graphs, tables, and schematics.
4. Evaluate the results obtained from quantitative methods for accuracy and/or reasonableness.

Proposed Quantitative Reasoning SLOs

1. Convert relevant information into an appropriate mathematical form, such as an equation, graph, diagram, table, or **words**.
2. Use **arithmetic**, algebra, geometry, statistics, or **logic** to solve related problems.
3. Interpret the significance, reasonableness, or implications of calculated results.

The Faculty Senate at CCSU voted unanimously to reject the proposed SLOs for several reasons. First, the inclusion of “words” in the first SLO makes it possible for a course to satisfy #1 even if it contains no equations, no graphs, no diagrams, and no tables. We do not believe that this is acceptable. Second, the inclusion of “arithmetic” in the second SLO makes it possible for a course to satisfy #2 even if it contains no algebra, no geometry, no statistics, and no logic. We do not believe that such a course would be at an appropriate level for a college general education curriculum. Third, we believe that “logic” should be changed to “formal logic”, to emphasize that a course does not qualify for this by virtue of inclusion of “logic puzzles” (such as the ones found on the LSAT), but rather by inclusion of the study of formal logic as found in discrete mathematics and philosophy courses. In this age where people are bombarded with vast amounts of numerical data that they do not know how to analyze properly, with discussions of “positivity rates” and related concepts, and with offers of credit cards and mortgages with high interest rates that will lock the applicant into an everlasting cycle of poverty and debt, we believe that community college and university students should take quantitative reasoning courses that are taught at the college level, and not at the middle school level.

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