COMMITTEE ON INSTRUCTION AND CURRICULUM

17-18 CIC 30
Monday, January 08, 2018

TO: The Academic Senate
FROM: General Education Subcommittee
VIA: Committee on Instruction and Curriculum (CIC)


PURPOSE: Request for Endorsement by the Academic Senate

ACTION REQUESTED: That the Senate endorse the attached CSU Math Council Resolution and ASCSU Resolution on Standards for Quantitative Reasoning AS-3308-17/APEP.

BACKGROUND INFORMATION:
At its meeting on November 29, 2017, the General Education Subcommittee was presented the CSU Math Council Resolution Regarding Purpose of and Requirements for General Education Mathematics/Quantitative Reasoning (“B4”) Courses and ASCSU Resolution on Standards for Quantitative Reasoning AS-3308-17/APEP. The Subcommittee was informed that both resolutions had passed unanimously in their originating bodies. After a brief discussion, the Subcommittee voted unanimously to endorse these resolutions. The Subcommittee believes these resolutions should form the basis for revisions to the outcomes and course characteristics for GE Area B4.

CIC reviewed and passed this document on 1/8/18.
STANDARDS FOR QUANTITATIVE REASONING

RESOLVED: That the Academic Senate of the California State University (ASCSU) hereby adopt foundational quantitative reasoning (as defined in the Quantitative Reasoning Task Force [QRTF] report of September, 2016 http://www.calstate.edu/acadsen/records/reports/documents/QRTF_FinalReport_KSSF.pdf) as the quantitative reasoning expectations for students at the time of freshman entry to the CSU; and be it further

RESOLVED: That the ASCSU hereby adopt baccalaureate quantitative reasoning (per QRTF report) as the quantitative reasoning expectations for students at the time of university graduation; and be it further

RESOLVED: That the ASCSU affirm that “baccalaureate level work” (cf. Executive Order 167, Transfer of Credit) in quantitative reasoning (area B4) has foundational quantitative reasoning as a base; and be it further

RESOLVED: That the ASCSU endorse the following expectations of Area B4 that move students toward mastery of baccalaureate-level quantitative reasoning outcomes. These specific expectations, drawn from the October 2017 CSU Math Council Resolution Regarding Purpose of and Requirements for General Education Mathematics/Quantitative Reasoning (“B4”) Courses are that students will:

- Develop quantitative skills and demonstrate a proficient and fluent ability to reason quantitatively at the college level;
- Develop and demonstrate a general understanding of how practitioners and scholars collect and analyze data, build mathematical models, and/or solve problems using quantitative methods that go significantly beyond the California Common Core State Standards in Mathematics for High School Graduation; and
- Be prepared to apply their ability to reason quantitatively in the various contexts defined by personal, civic, and professional responsibilities.

; and be it further

RESOLVED: That the ASCSU urge the Chancellor’s General Education Advisory Committee to consider inclusion of these standards and expectations into its Guiding Notes and that CSU campuses rely on these standards and expectations in the development and assessment of GE Area B4 courses; and be it further

RESOLVED: That the ASCSU encourage the CSU to disseminate widely the intention to add a requirement for a mathematics/quantitative reasoning course in the fourth year of high school as a CSU entry requirement for admission for graduating high school seniors; and be it further

RESOLVED: That the ASCSU distribute this resolution to the CSU Board of Trustees, CSU Chancellor, Executive Vice Chancellor of Academic and Student Affairs, Assistant
Vice Chancellor of Academic Success and External Partnerships, CSU campus Presidents, CSU campus Provosts, CSU campus Senate Chairs, CSU campus articulation officers, California Faculty Association (CFA), California State Student Association (CSSA), CSU Emeritus and Retired Faculty Association (ERFA), Academic Senate for the California Community Colleges, and the Academic Senate of the University of California.

RATIONALE: The push for the elimination of developmental quantitative reasoning and writing within the CSU has a long and storied history. Recent actions include a requirement to achieve remediation with the first academic year and the associated requirements around early start in English and Mathematics proficiency.

The limits to pre-baccalaureate units from Executive Order (EO) 1110 implicitly assume that students will graduate sooner if they are exposed to university-level work with appropriate support rather than fulfilling a more complete proficiency-development process. The push for a strong increase in graduation rates envisioned for 2025 will reflect the six-year graduation rates for the 2019 incoming freshman class. Concerns that limiting proficiency-development will lead to a decline in educational standards have been raised. The grounding for this aspirational movement away from “pre-remediation,” in part, depends on data that illustrate success (passing courses in quantitative reasoning/mathematical competency) for students with just-in-time and/or contextual access to appropriate background information and instructional support systems. The resolution argues for the importance of further implementation of the QRTF report recommendations in achieving these goals. Most specifically, the Quantitative Reasoning Task Force report reinforces ASCSU Resolution AS-3244-16/APEP which advocated for four years of high school quantitative reasoning coursework as part of the CSU admissions criteria as a means of achieving foundational quantitative reasoning for incoming students.

The CSU GE Guiding Notes are updated annually. They exist as an interpretive document which elucidate the requirements of executive orders on General Education (currently EO 1100 [Rev]). They include expert advice and feedback from disciplinary experts and also answers common questions that arise in the GE review process.

The QRTF recommends adoption of a baccalaureate quantitative reasoning requirement which appears to be precluded by the following paragraph in EO 1100 (revised):

"Satisfaction of CSU GE Area B4 Mathematics/Quantitative Reasoning shall fulfill CSU graduation requirements for mathematics/quantitative reasoning, exclusive of mathematics/quantitative reasoning courses necessary for satisfaction of major requirements."

For reference, the QRTF defines foundational quantitative reasoning (page 14).

Upon entering the California State University in pursuit of a baccalaureate degree, students will be prepared to develop their ability to reason quantitatively in the broad...
spectrum of courses involving quantitative reasoning offered within the CSU (including, but not limited to, B4 courses). In particular, a student who has satisfied the foundational quantitative reasoning requirement shall have:

- Demonstrated proficiency and fluency in the combined skills found in the California State Standards for K–8, Algebra 1, and Integrated Math 1
- Practiced the skills in the K-12 California State Standards for Mathematics in a variety of contexts that broaden, deepen or extend K-8, Algebra 1 and Integrated Math 1 skills;
- Developed the eight Common Core mathematical practices, which are the abilities to:
  - Make sense of problems and persevere in solving them
  - Reason abstractly and quantitatively
  - Construct viable arguments and critique the reasoning of others
  - Model with mathematics
  - Use appropriate tools strategically
  - Attend to precision
  - Look for and make use of structure
  - Look for and express regularity in repeated reasoning.

Also, for reference, the QRTF defines baccalaureate quantitative reasoning (page 12).

To earn a baccalaureate degree from the California State University, students shall:

i. Develop and demonstrate a proficient and fluent ability to reason quantitatively in a broad spectrum of the contexts defined by California State Standards for High School;

ii. Develop and demonstrate a general understanding of how practitioners and scholars solve problems quantitatively in a range of disciplines;

iii. Develop and demonstrate an in-depth understanding of how practitioners and scholars solve problems quantitatively in a specialized area (e.g., the major); and

iv. Be prepared to develop their ability to reason quantitatively after graduation in the various contexts defined by personal, civic, and professional responsibilities.

Approved Unanimously – November 3, 2017
CSU Math Council Resolution Regarding Purpose of and Requirements for General Education Mathematics/Quantitative Reasoning (‘B4’) Courses

Whereas, EO 1100 (revised) and EO 1110 collectively remove assumptions that have underpinned General Education Mathematics/Quantitative Reasoning (‘B4’) courses for over two decades (at least since 1997 with EO 665); and

Whereas, EO 1100 (revised) provides limited guidance on the nature of a B4 course; therefore be it

Resolved that the CSU Mathematics Council asserts a B4 course must be primarily about mathematics/quantitative reasoning; and be it further

Resolved that the CSU Mathematics Council asks that the following language be used by the California State University to define the purpose and outcomes of such courses:

The primary purpose of any B4 or B4-transferrable class shall be for students to:

(a) Develop quantitative skills and demonstrate a proficient and fluent ability to reason quantitatively at the college level;

(b) Develop and demonstrate a general understanding of how practitioners and scholars collect and analyze data, build mathematical models, and/or solve problems using quantitative methods that go significantly beyond the California Common Core State Standards in Mathematics for High School Graduation; and

(c) Be prepared to develop their ability to reason quantitatively after graduation in the various contexts defined by personal, civic, and professional responsibilities.