

Rationale for the Proposed Change:

The CSU understands the concerns expressed by the various school districts about the proposed addition of one year of Quantitative Reasoning for CSU admission for first time freshmen. Having said that, we also understand that the alternative is to remain with the status quo. The status quo will continue to put the most vulnerable students at a great disadvantage. Under current practice, disadvantaged students who are admitted to College, most often skip enrollment in quantitative reasoning (QR) courses during their senior year of high school. This gap year in exposure to QR content results in many students regressing in their quantitative reasoning skills. By the time these students begin college, they struggle with College level math courses and often end up in a College remediation cycle that delays graduation, and often results in the student dropping out of college. Additionally, the longer a student takes to graduate from College, the more likely it is that they will run out of financial aid...and without financial aid, they can't afford to continue. We must do better than our current practices and focus on both College admissions and College completion/graduation.

What Exactly does QR Mean?

CONCERN: Several districts expressed possible support if the QR requirement was inclusive of computer science courses or gateway engineering courses. Yes-see attached fact sheet

RESPONSE: It is our understanding that there will be a variety of approaches to address the QR requirements and these could include computer science or engineering courses.

When will this QR Requirement Take Effect?

CONCERN: Districts expressed concerns about the timing of the requirement and wondered if districts would have sufficient time to tool themselves to deliver on the new QR requirement.

RESPONSE: The change if approved by the board of trustees will take effect in 2026.

Creating Additional Barriers?

CONCERN: Districts are concerned that adding another year of math will reduce the number of eligible students admitted.

RESPONSE: We fail these students if we admit them and they do not have the prerequisite QR knowledge to be successful in College. The QR requirement would ensure that all students admitted to college are prepared and ready to successfully complete college-level QR courses.

Math Requirements for Various Degrees

CONCERN: Districts expressed concern over the fact that there is a diversity of higher education degrees through CSU that do not require higher level math to complete a degree.

RESPONSE: The QR requirement does not necessarily mean that the course must be a higher level mathematics course. As noted in our preamble, the QR course could take a variety of approaches to ensure that college-bound students remain active and engaged in QR through their senior year. Additionally, all College majors have general education requirements that require competence in college level math. Therefore, regardless of the major that students chooses, they must still be able to successfully pass a set of math courses at the college level and having the QR course during their senior year will improve their chances for success.

Current HS Math Offerings & Room for New Requirement

CONCERN: Districts note that their current math offerings (three courses) require exposure to math analysis and quantitative reasoning within the common core standards. Districts further note that adding another course would reduce opportunities for a higher level science, technology or engineering courses. Some noted that there isn't enough room in all students' schedules for more requirements.

RESPONSE: Because the QR requirement could be met in a variety of ways, the requirement itself should not prevent a student from enrolling in courses that meet the QR requirement (e.g., computer science, engineering, certain science courses, etc.) The reality is that this new

requirement will ensure that students remain engaged in using QR to prevent the sort of regression in performance that would otherwise take place if these students do not enroll in a QR course during their senior year. The QR course would theoretically replace electives during the senior year.

Math Teacher Shortages

CONCERN: There is a shortage in math teachers throughout the state and Monterey County has struggled to find math teachers prior to the statewide teacher shortage. Districts struggle now with recruiting and retaining math teachers. Another course requirement will result in an even greater need for math teachers.

RESPONSE: We will continue to address the teacher shortage in a variety of ways to bolster capacity in high schools. First, we will use the successful Expository Reading and Writing Curriculum –ERWC – as a model to expand course availability in California high schools. The ERWC, now offered in more than 1,000 high schools, provides seniors the opportunity to complete a fourth-year course in English language arts. These courses were co-developed by CSU and high school faculty and capacity was expanded by collaboratively working with county offices of education on professional development and curricular integration.

We will follow this same model in building more teaching capacity where it is most needed. Currently, this work for quantitative reasoning has been ongoing. Since 2016, CSU faculty and staff have been working with the California Department of Education and PK-12 and community college partners to develop a “bridge” or transitional course from high school to higher education through the California Mathematics Readiness Challenge Initiative (CMRCI). These courses provide an additional way for students to meet the proposed quantitative reasoning requirement... and these courses can be found across the state... from Nevada County in the

north to San Diego county in the south. These partnerships were a direct result of a \$10 million-dollar legislative investment in improving the transition between high school and college in 2017. It is this exact type of support from the legislature and administration that would support the continuation and the scaling of this important work in the future. Currently, through partnership among CSU campuses at Monterey Bay, Northridge, Sacramento, San Bernardino, Pomona, Long Beach, San Jose and San Diego... new pilot transitional courses exist in more than 160 California high schools, with more than 10,000 students participating in these courses annually. We will continue to support these courses and work with districts and county offices of education to expand these course offerings, beginning with the districts we have identified as most in need of additional capacity.

In addition to this curricular support, the CSU and the state can continue to invest in growing the number of new teachers produced by the state, particularly in mathematics, science and other high need areas. In July, 2019, CSU Chancellor Tim White has committed an additional \$10 million additional investment over the next four years to prepare more teachers in STEM fields. This investment is on top of the \$2.7 million currently invested each year by the CSU.

On average, the CSU currently prepares approximately 1,000 new mathematics and science teachers every year. Many of these teachers go on to teach in the state's high-need schools where 25 percent or more students come from families below the poverty line and mathematics achievement rates are significantly below statewide averages. We anticipate this number will increase with the investment of additional funds to enroll more teacher candidates.

And finally, the CSU will continue to offer professional development and in-service opportunities to help current PK-12 teachers develop and implement curricula for quantitative reasoning courses. Many of these opportunities will be conducted by the CSU Center for the Advancement of Instruction in Quantitative Reasoning.

