From: Kenward Vaughan
Date: March 7, 2022 at 9:54 PM
Subject: Concerning issues surrounding STEM, CTE, and related areas

Dear members of the Academic Senate,

This email concerns the mathematics curriculum mandate to be discussed by your group on Wednesday; it came to light in some interpersonal discussions during FCDC last week. What is written takes longer than 3 minutes to present as a speech...

STEM is an important, critical part of our society and world. Were God to remove from your vicinity anything which relied on science for its existence, you would be left with virtually nothing around you including your home, car, phone, safe food and water, sanitation, medicines, clothing (except hand-made and sewn cottons), etc., etc. You would be left with no knowledge/understanding of events about to occur (say, huge hurricanes or an incipient cancer in your lungs), or have the ability to travel more than roughly 25 miles per day anywhere.

We need STEM. We need people with cool new ideas who will further its continuing contributions to society. We also need the oft' overlooked areas found in the CTE and related programs, a number of which demand math competency at the college level. Many of those make up a good portion of how STEM brings to us its benefits for society.

STEM is certainly a general area (a meta pathway?) which is accessible to all, but like all fields of endeavor it is not for everyone. The intricacies and rigors involved in its study, learning, and application to the world cause many to hesitate, and many of those to change direction. This is understandable and accepted by people already in the discipline since they too had made decisions about their chosen directions.

Many in the STEM area have heard things similar to "Science is the poetry of the physical universe" and "Math is the language of science." Math is the key fundamental backbone of science, with the general language of science (with its many dialects) overlaying the mathematics that underlies many parts of the disciplines.

The reason behind the above rhetoric comes from news that the California system apparently has decided to remove college algebra (our math B75) from the CC's list of courses. A school is allowed to keep it only if several requirements (defined by someone apparently outside of STEM) are met. What we have immediately available as a demonstration of need has not been deemed acceptable.

That information involves showing the Californian universe that students cannot learn science well without a good foundation of math. This foundation begins at the college level with algebra, leading ultimately to Calculus. BC works with anyone who walks through our doors. Due to the poorer levels of K-12 education in Kern, we must pull many students up to a level of mathematical competency that too few have on their arrival here. Math B75 is an essential part of that competency building.

This is incredibly obvious in one example area, chemistry, wherein we see incoming students with a HS background in algebra (or higher) who cannot solve a two-variable equation given one of the variables, or look at a graph and have any idea of what it is telling them. This is both heartbreaking and frustrating for us because it means that these people will struggle mightily just to pass our first semester majors' course (which is needed in all STEM majors). The under-prepared that do manage to pass typically struggle even more in the next class, and they often leave disheartened by the great difficulties they encounter.

Math B75 is the minimum prerequisite for these courses. Students will drop like flies under a swatter without at least this level of math competency. Some of us have counseled people to pursue math to a fuller extent before entering these courses (e.g., also take at least the first semester of pre-Calculus). We know that this will help inculcate them with a sounder ability to problem-solve and critically think about solutions to scientific problems. Their lack of preparation naturally translates to longer times with the community college, but it is not a fault of what we do here.

There is much talk of equity and inclusivity coming out of Sacramento these days; that label is being splashed upon many things to literally force change via rhetorical coercion. None of us at our level are against much needed changes which remove unfairness and give everyone the opportunity to move down a pathway of their liking. But this change in the mathematics offered is NOT one of those. It is the exact opposite, and makes one wonder "What is the purpose of this aspect of the legislation?"

One of the cartoons used in a past meeting about equity showed three people attempting to watch a baseball game over a fence, with the final panel showing its version of equity as giving boxes to the smaller persons to stand on so that all had the same opportunity. This was called making the playing field accessible and equitable.

If we remove math B75 from our courses, we will have ripped away those boxes and caused a huge disparity between those who are fortunate enough to have had that training before coming to BC, and those who lack it. It cannot be addressed by short, non-credit courses that too few would take voluntarily. Only the select few will be truly successful. Everyone else will quite possibly fail (and that is the distinct majority).

From there the nightmare scenario would be to call STEM inequitable, leading to either calling for its dismemberment or forcing such a relaxation on its requirements that few coming through our system would be prepared to contribute and succeed in their endeavors. Our society would be dumbed down. This is not a good solution.

The undersigned are calling on the Senate to reject plan 2 and select plan 3 to retain math B75, necessary for students to move through STEM pathway classes as well as the CTE and other programs. Time must also be given for the attainment of data from impartial sources. We must not pull up the drawbridge to STEM (or anyone else seeking to better themselves). It must remain accessible to all our students. Anything else creates a very real systemic inequity blocking many who want to succeed in an important endeavor, ultimately affecting all of us.

We appreciate your sincere consideration of our concerns and our request.

Kenward Vaughan, chair of physical sciences
Jason Dixon, chair of engineering
Joe Saldivar, chair of biology
Josh Lewis, chair of mathematics
Alisha Loken, chair of nursing
Jacelyn Hill, program director, radiologic technology
Suzanne Oesch, PTA program faculty director
Klint Rigby, chair of industrial technology
Kathleen Rush, professor of mathematics, prior chair to the department
Deborah Rosenthal, professor of chemistry
Timothy Plett, professor of physics