

DATE: 5/15/20

TO: Ram Subramaniam, PSME Dean; Evan Gilstrap, Articulation Officer; Chemistry Faculty;
Curriculum Committee

FROM: Doreen Finkelstein, Research Analyst

RE: Change of Math Prerequisite for Chemistry

Introduction:

As a prerequisite for taking CHEM 25 or CHEM 1A at Foothill College, students are first asked to demonstrate sufficient background in math. Historically, this prerequisite has been satisfied by either successful completion of intermediate algebra (MATH 105 or MATH 108), or placing into a higher-level math class.

Intermediate algebra is not a transfer-level math class. As of Fall 2018, in compliance with state legislation (AB 705), all students are placed into transfer-level math, thereby automatically satisfying the math prerequisite for chemistry. As a result, Chemistry faculty are exploring changing the math prerequisite from intermediate algebra to precalculus (MATH 48A).

This report provides background analyses pertaining to this discussion. Analyses focus on a review of the historical data (Fall 2015-Spring 2018) as well as a comparison of student experiences

disproportionate impact on groups historically underrepresented in STEM (African-

There was a drop in the success rate in CHEM 1A after implementation of AB 705 in Fall 2018. However, this drop is not driven by an increase in the number of students who take CHEM 1A without first passing MATH 48A. Rather, more students had successfully passed MATH 48A prior to taking CHEM 1A after AB 705 implementation.

Results Detail:

I. Analyses on Access

How would changing the math prerequisite for CHEM 25 affect access to that class?

Post-AB 705:

14% (234) first passed MATH 48A or higher in the STEM math sequence in the same term as they first took CHEM 25.²

30% (513) passed MATH 48A or higher in the STEM math sequence prior to taking CHEM 25.

As shown in Table 1, compared to students who did not pass STEM math prior to or while taking CHEM 25, the 30% of students who would have satisfied a MATH 48A prerequisite were:

Less likely to be African-American (2% vs. 5%), Filipinx (3% vs. 8%), or Latinx (16% vs. 30%), and more likely to be Asian (42% vs. 31%) or Decline to State (16% vs. 4%).

Less likely to be female (42% vs. 59%).

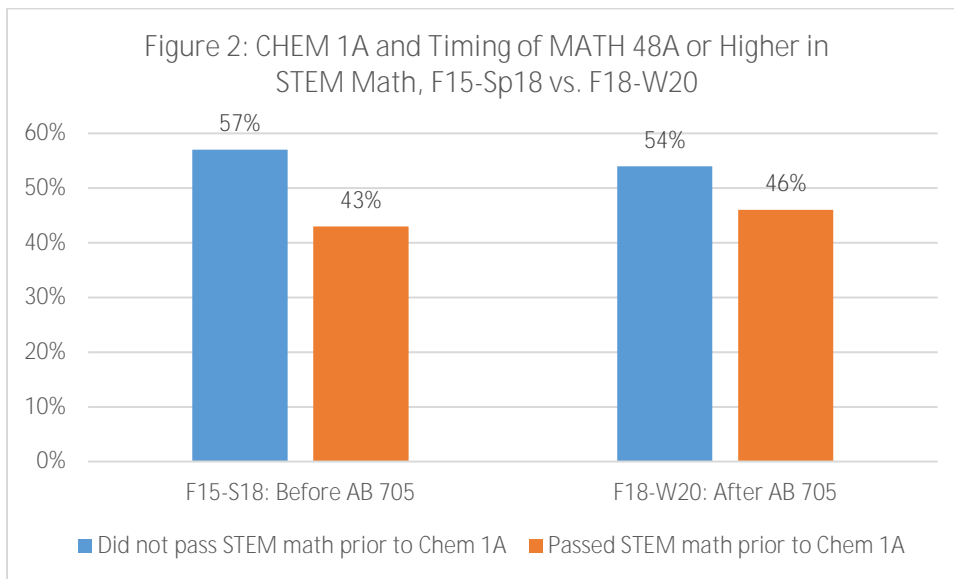
Less likely to be first generation (16% vs. 29%).

| Table 1: CHEM 25 and Timing of MATH 48A or Higher in STEM Math, F15-Sp18 | | | | | | |
|--|---|---------|---|---------|-------------------------|---------|
| | Did Not Pass Prior to or While Concurrently Enrolled w/ CHEM 25 | | Passed While Concurrently Enrolled w/ CHEM 25 | | Passed Prior to CHEM 25 | |
| | Count | Percent | Count | Percent | Count | Percent |
| By Ethnicity: | | | | | | |
| African American | 49 | 5% | 6 | 3% | 9 | 2% |
| Asian | 292 | 31% | 84 | 36% | 217 | 42% |
| Filipinx | 74 | 8% | 17 | 7% | 16 | 3% |
| Latinx | 283 | 30% | 49 | 21% | 83 | 16% |
| Native American | 5 | 1% | 1 | | | |

How would changing the math prerequisite for CHEM 1A affect access to that class?

Post-AB 705:

As shown in Figure 2, the percent of students who enrolled in CHEM 1A after passing MATH 48A or a higher STEM math class was slightly higher (46% vs. 43%) after all students were given access to transfer-level math in Fall 2018, in accordance with AB 705. Access to transfer-level math did not reduce enrollment of students to CHEM 1A who had successfully passed MATH 48A; instead, it increased it.



Pre-AB 705:

Among the 1,382 students who attempted CHEM 1A for the first time between Fall 2015 and Spring 2018:

57% (791) did not pass MATH 48A or higher in the STEM math sequence prior to taking CHEM 1A.

43% (591) passed MATH 48A or higher in the STEM math sequence prior to taking CHEM 1A.

As shown in Table 2, a comparison between students who either passed or did not pass a STEM math class prior to CHEM 1A enrollment shows that those who passed MATH 48 or higher:

More likely to decline to state their ethnicity (11% vs. 6%).

Less likely to be female (41% vs. 53%).

Less likely to be first generation (13% vs. 18%).

| Table 2: CHEM 1A and Timing of MATH 48A or Higher in STEM Math, F15-Sp18 | | |
|--|--|-------------------------|
| | Did Not Pass Prior to CHEM 1A Count | Passed Prior to CHEM 1A |
| | | |

Pre-AB 705:

A total of 941 students took CHEM 1B

