

Comprehensive Program Review Report



Program Review - Mathematics

Program Summary

2021-2022

Prepared by: Matthew Bourez

What are the strengths of your area?: The mission of the Mathematics Department is to provide a foundation for liberal arts education and a foundation for the study of the sciences. This is accomplished by providing students with a broad range of courses taught through a wide range of delivery options including traditional lecture, hybrid, and online courses. Though this past year has been challenging we continue to strive to make math courses available in all of these modalities.

We have well-qualified full time instructors within the Math Department. We have several who have published textbooks or will soon publish textbooks within their discipline. We have others who have published articles in refereed mathematical or statistical journals. We have a couple of Golden Apple Award winners and others that have been recognized for their excellence in teaching within local or state organizations. In total, we have 16 full-time faculty members in the mathematics unit. Over the past year, we have a net loss of zero full-time instructors and one adjunct member. We are anticipating the retirement of a full-time faculty member at the end of the 2021-2022 academic year.

With our near complete transition into a post-AB705 curriculum, we now examine our course as Transfer Level (Math 5, 10, 11, 21, 35, 44, 70, and 154) and Major Courses (Math 65, 66, 67, 80, and 81). With Math 10, Math 21, Math 35, and Math 44 we further break down the analysis in courses taken with and without support.

For Transfer Level courses that can be taken with or without support we experienced the following successes.

Course		Fall 2020 Success	Enrolled	Spring 2021 Success	Enrolled
Math 10	70	103		63	
91					
Math 10 with Support	51	107		32	
72					
Math 21	476		831		287
540					
Math 21 with Support	471	876		285	
581					
Math 35	94		128		34
59					
Math 35 with Support	56	156		57	
107					
Math 44	NA		NA		7
24					
Math 44 with Support	32	49		17	
42					

There were a total of 2310 students that successfully passed one of these classes during the 2019-2020 academic year (fall and spring) compared to 1935 students during the 2020-2021 academic year. This would constitute a 16.2% decrease in the number of students that successfully completed these courses. Though there was a decrease this throughput is still nearly double what it was in academic years prior to AB705.

This year math placement was altered so that underprepared students will be required to begin the STEM pathway in Math 44 as opposed to Math 35 with the previous placement model. We are already experiencing increased enrollment in math 44 and

are hopeful of increased success in both Math 44 and math 35 courses.

For Transfer Level courses that cannot be taken with support, we experienced the following success.

Course	Enrolled	Fall 2020 Success	Enrolled	Spring 2021 Success
Math 11	61		86	81
	102			
Math 5	NA		NA	18
	39			
Math 70	33		47	8
	25			
Math 154	73	112		87
	130			

Overall, the success rate (excluding EW grades) decreased from 90% to 88% for Math 11 from the 2019-20 academic year to the 2020-2021 academic year; Success for Math 70 decreased from 71% to 68%; And success for Math 154 increase from 69% to 77%. Math 105 (now Math 5) was taught for the first time in spring 2021 and experienced a success rate of 55%. Overall success rates were similar for these courses to the prior year.

For Major courses

Course	Enrolled	Fall 2020 Success	Enrolled	Spring 2021 Success
Math 65	112		136	66
	103			
Math 66	43		54	53
	80			
Math 67	26		29	30
	38			
Math 80	22		23	10
	15			
Math 81				15
	20			

We saw slight increase in success rates and throughput in Math 65, 66, and 80, while experiencing a slight decrease in success rates and throughput in Math 67 and 81. Overall, STEM students adapted well to the online learning environment they were forced into.

With the effects of the COVID pandemic and the continued impact of AB705, enrollment in math courses has changed. The FTES generated by math courses in 2020/2021 is 777.10, which is down 138.07 FTES from the previous year and down 302.87 from two years ago. Due to these significant decreases in FTES, the division's productivity (FTES/FTEF) fell to 14.52, down from 16.19 last year and falling below the target ratio of 17.5.

Our department prides itself on providing our students with a quality mathematics education by maintaining high academic standards as well as keeping up with the latest educational developments by attending state and national conferences such as AMATYC (American Mathematical Association of Two-year Colleges), CMC³ (California Mathematics Council of Community Colleges), and ICTCM (International Conference on Technology in Collegiate Mathematics) among others. This past year, much of our time was spent reacting to various changes. As we continue our efforts to fine tune both our math placement and course offerings in response to AB705, we have a great deal of time and effort adapting to the dramatic shift in teaching methods caused by the COVID-19 pandemic. The math department has handled these changes well and will continue to adapt as needed. The Math department is intimately involved in both the MESA and SETA programs. These programs offer valuable opportunities for our students. These opportunities serve to enrich their academic experience and help meet their educational and career objectives. Faculty members participate in a variety of ways including working with student mentors to provide Academic Excellence Workshops, presenting interesting research and mathematical ideas as keynote speakers at SETA meetings, as well as act as mentors and chaperons on field trips to 4-year colleges and universities.

Finally, we take our role in student support services very seriously. One of the most visible student support services on campus is the Math Center. Here, students can get help in an open lab environment with instructor assistance. The idea is that students will be able to strengthen their mathematics skills and reinforce their mastery of the mathematical concepts by attending the lab on a regular basis.

What improvements are needed?: We still need to ensure that we are in compliance with AB705 while continuing to deliver quality education. We need to continue the conversations that were started last year centered around validating our work on AB705 and our placement of students into support courses. To ensure quality education, we will need to have the appropriate equipment and supplies for our classes.

A new math placement grid will take effect this school year. We will continue to evaluate the placement procedures to ensure that we are appropriately placing students based upon their high school GPA and coursework. Additionally, we will be continuing to examine the curriculum (MATH 44 and support courses) to see if further modifications will be necessary. We next intend to examine the continued low enrollment in Math 70. We are currently discussing options. One action we are considering is replacing MATH 070 with a short term MATH 35 and MATH 154. In addition to this we are looking at writing a support course for MATH 65 and having those students that would have placed into MATH 70 to take MATH 65 with support. We also need to continue to advertise the changes that are occurring with the math curriculum to the campus. With the addition of support courses, a new math course (MATH 44), and changes to math placement, it is critical to keep the campus community informed regarding these changes and the impact they may have.

Describe any external opportunities or challenges.: Over the past year we have had two major challenges: the COVID pandemic and AB705. In many situations we have put our work on AB705 on hold in order to address the immediate needs created by the COVID pandemic. The unprecedented changes made necessary by the COVID pandemic have demanded much of our time and effort over the past year. The hope is that the demands from the pandemic will lessen this year and we can once again continue our work adapting our curriculum and placement to better serve our students.

biggest external challenges come from the State Legislature (AB705), the CSUs and the Chancellor's office. These have changed the landscape as it relates to the developmental/remedial mathematics curriculum and math placement. We have moved swiftly to become fully compliant with AB705. We developed co-requisite support courses for our entry-level transfer courses and added a college algebra course to our sequence. We have further updated our placement rules that will be effective Fall 21 and are now focused on gathering data and validating the work done.

Overall SLO Achievement: The overwhelming effort put into addressing the needs of students during the pandemic have slowed our work on assessing SLOs. We are using an imbedded question approach in the majority of our courses and the student learning outcomes indicate similar or improved achievement when compared with previous assessments. Additionally, we developed a method of assessing support courses with a student survey.

Changes Based on SLO Achievement: One change that we have implemented was simply in the type of assessments we are using. We are looking for more effective and efficient methods of obtaining the results of these assessments from so many sections taught by a large number of faculty members.

Overall PLO Achievement: We have mapped our individual course outcomes to our program outcomes and our program outcomes to our district objectives and institutional outcomes.

Changes Based on PLO Achievement: No significant changes based upon PLO Achievement.

Outcome cycle evaluation: We have broad, effective participation within the unit. Dialogue Days are well attended as are other division meetings where we work on learning outcomes. We are still seeking to find the best method of assessment that will allow us to find appropriate improvement strategies. However, we are satisfied with the results and process so far.

Action: New Chairs in Kaweah 204A

Purchase 40 new computer chairs for Kaweah 204A

Leave Blank:

Implementation Timeline: 2020 - 2021

Leave Blank:

Leave Blank: 01/04/2021

Identify related course/program outcomes:

Person(s) Responsible (Name and Position): Matt Bourez, Division Chair Math and Engineering, Bryon Woods, Dean of Facilities

Rationale (With supporting data): The current chairs in Kaweah 204A are old and mismatched. Many of the chairs are breaking or have broken parts. Students are no longer able to comfortably sit through a 50 minute lecture.

Priority: High

Safety Issue: Yes

External Mandate: No

Safety/Mandate Explanation: Broken and breaking chairs have the potential of injuring students.

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Facilities - 40 Computer Chairs (Active)

Why is this resource required for this action?: The chairs must be purchased in order to replace the existing chair in Kaweah 204A which are breaking or broken.

Notes (optional): The estimated cost was obtained from Byron Woods.

Cost of Request (Nothing will be funded over the amount listed.): 8000

Link Actions to District Objectives

District Objectives: 2018-2021

District Objective 2.3 - By 2021, increase the percentage of students who complete transfer-level English by 15 percentage points and transfer-level math by 10 percentage point with their first year.

Action: Gather success data for Math 21 with and without support

Gather and analyze success rates for Math 21 with and without support in order to work towards validating our corequisite model for the purposes of AB705

Leave Blank:

Implementation Timeline: 2020 - 2021

Leave Blank:

Leave Blank:

Identify related course/program outcomes:

Person(s) Responsible (Name and Position): Matt Bourez, Division Chair Math and Engineering

Rationale (With supporting data): As we continue to work with the new course structures and placement model to remain in compliance with AB705, we need to analyze to ongoing success rates within Math 21 and Math 321. The data obtained will be used to validate the placement model that we are using.

Priority: High

Safety Issue: No

External Mandate: No

Safety/Mandate Explanation:

Action: Room Remodels 2019-2020

Remodel rooms in Yokut (11, 12, 13) and San Joaquin (1, 2)

Leave Blank: Continued Action

Implementation Timeline: 2019 - 2020, 2020 - 2021

Leave Blank: 10/15/2017

Leave Blank: 01/04/2021

Identify related course/program outcomes:

Person(s) Responsible (Name and Position): Division Chair of Math and Facilities Director (Byron Woods)

Rationale (With supporting data): The following is an excerpt from one faculty members feelings regarding the state of this room:

The Yokut rooms are horrible, and the San Joaquin rooms are worse. The floors squeak and bounce, the roof leaks, the AC is too loud for my students to hear my lecture, and the rooms are awkwardly laid out...I mean, we are an institute of higher education. I would think that making sure we have functional classrooms would be a top priority... So I guess my question is what can we do about this? Is this something that we can submit as part of program review? Maybe this is an issue you've all talked about in the past, but if there's any pressure that we can put on the powers that be, it seems to me that we should be doing so. Incessantly.

In short, better rooms will help with student learning as our current situation is not real conducive to learning.

Priority: High

Safety Issue: No

External Mandate: No

Safety/Mandate Explanation:

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Update on Action

Updates

Update Year: 2020 - 2021

09/15/2020

Status: Continue Action Next Year

None of these rooms have been remodeled and they continue to deteriorate. The ability to effectively teaching continues to be hampered by poor lighting and aging infrastructure.

Impact on District Objectives/Unit Outcomes (Not Required):

Resources Description

Facilities - Remodel rooms in Yokut (11, 12, 13) and San Joaquin (1, 2)

"An estimated construction cost for carpet, subfloor repairs, window blinds, new paint, and LED lighting upgrades in any of the Yokut or San Joaquin portable classrooms would be about \$12,000 per room.

If you are interested in replacing the HVAC unit with a new, quieter, more efficient unit, the estimated cost would be about \$8,000 per room. Depending on the room, there is a possibility of sound dampening these units, however, for budgeting purposes I would just request to replace the existing units.

All in all, a full "remodel" of a portable classroom (Yokut or San Joaquin) should run about \$20,000 per room. Please note that the above improvements do not include any technology or related equipment upgrades. Please let me know if you have any additional questions. Thanks!"

Byron Woods
(Active)

Why is this resource required for this action?: The following is an excerpt from one faculty members feelings regarding the state of this room:

"The Yokut rooms are horrible, and the San Joaquin rooms are worse. The floors squeak and bounce, the roof leaks, the AC is too loud for my students to hear my lecture, and the rooms are awkwardly laid out...I mean, we are an institute of higher education. I would think that making sure we have functional classrooms would be a top priority... So I guess my question is what can we do about this? Is this something that we can submit as part of program review? Maybe this is an issue you've all talked about in the past, but if there's any pressure that we can put on the powers that be, it seems to me that we should be doing so. Incessantly. "

In short, better rooms will help with student learning as our current situation is not real conducive to learning.

Notes (optional): We will take anything that we can get. The cost estimate below is for all 5 rooms fully done. But we could do one room at \$12,000 per room and not replace the HVAC unit.

Cost of Request (Nothing will be funded over the amount listed.): 100000

Action: Computer Labs 2019-2020

Increase the number of computer labs accessible to the Math Division

Leave Blank: Continued Action

Implementation Timeline: 2020 - 2021

Leave Blank: 10/15/2017

Leave Blank: 01/04/2021

Identify related course/program outcomes:

Person(s) Responsible (Name and Position): Division Chair of Mathematics in conjunction with the BSSOT Grant, Facilities, and IT.

Rationale (With supporting data): The impact from AB705 is tremendous in terms of facilities. We are in desperate need of

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additional computer labs with desktops preferably. We will triple the number of Math 21 courses currently offered and we need additional computer labs or we will have to teach the classes as hybrid or online to meet the demand.

Visalia:

Allow Math to use the Placement office SEQUOIA 157 as a classroom since it already is a computer lab.

Convert SEQUOIA 150 or JM 223 to a computer lab or one of our modular rooms.

Change Alpine 3 to a computer cart with laptops instead of tablets. We have had issues with the tablets charging.

Tulare:

Purchase 60 laptops for room B125 with charging carts.

Hanford:

Purchase 30 desktops computers to fit in desks in E92.

Priority: High

Safety Issue: No

External Mandate: Yes

Safety/Mandate Explanation: AB705 requires us to use high school data to place students in order to “maximize the probability that the student will enter and complete transfer-level coursework in English and mathematics within a one-year timeframe.” It also, prohibits, us “from requiring students to enroll in remedial English or mathematics coursework that lengthens their time to complete a degree unless placement research that includes consideration of high school grade point average and coursework shows that those students are highly unlikely to succeed in transfer-level coursework in English and mathematics.”

The impact from AB705 is tremendous in terms of facilities. We are in desperate need of additional computer labs with desktops preferably. We will triple the number of Math 21 courses currently offered and we need additional computer labs or we will have to teach the classes as hybrid or online to meet the demand.

Update on Action

Updates

Update Year: 2020 - 2021

09/15/2020

Status: Action Completed

During the summer of 2019 two additional computer labs were created for the math department. The labs are currently enough for the number of statistics course that we are offering.

Impact on District Objectives/Unit Outcomes (Not Required): Because of the additional labs we have been able to effectively offer the number of sections of statistics that are needed for mathematics students. This has helped us to offer more transfer level mathematics course and better comply with the requirements set forth by AB705.

Resources Description

Facilities - This request could be considered Facilities, Instructional Equipment or Technology as all three are part of this request.

We are requesting that 1 of our rooms be converted to a computer lab with desktops. I reached out to Facilities and IT for quotes for what it would cost in terms of facilities, desktop computers, desks, cabling, etc. As this could depend on the room and the current infrastructure in place in that particular building, I gave Facilities and IT the following room options:

Sequoia 150

Yokut 11, 12, 13

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We anticipate 40 desktops in a room.

(Active)

Why is this resource required for this action?: The impact from AB705 is tremendous in terms of facilities. Specifically, we are in need of additional computer labs with desktops. We lose 20% of our teaching time with laptop carts and using them all day, every day, the batteries run out for our afternoon and evening instructors. Thus, laptop carts are not ideal. We have approximately tripled the number of Math 21 courses offered and we need additional computer labs to meet demands and potentially grow or we will have to teach the classes as hybrid or online which are not ideal modalities for all students. In order for Math 21 (Statistics) to articulate to the 4-year universities in California, our course outlines require that we use statistical software extensively throughout the course. For example, my students are on the computers every day throughout the entire semester except for possibly three or four days.

Based on previous requests, a computer cart for Alpine 3 with 45 laptops will run roughly \$60,000. This was the cost for the same set up in SJ two years ago.

THE QUOTE FOLLOWS FROM BYRON WOODS (Facilities) regarding remodeling a room.

Hi Jared,

Just following up on your program review request. I've provided Chris with an estimate of \$175k to convert a standard modular classroom (i.e. San Joaquin or Yokut) to a computer classroom (computer desks with built-in computers). This is a ballpark estimate based on our recent computer lab installation in Hanford earlier this year. Christine and Jennifer have been notified of your program review request. In fact, I believe Chris discussed it with Senior Management yesterday. I think they are still in the process of discussing details in regards to permanent versus mobile computer arrangements (I'm not involved in this conversation). Hopefully the above cost estimate allows you to proceed with your program review request. If you have any further questions, please feel free to contact me.

Thanks,

Byron Woods
Dean of Facilities
College of the Sequoias
915 South Mooney Blvd.
Visalia, CA 93277

Here is the Quote from Chris Sutherland (Dean) in charge of BSSOT monies that we have also been working with in regards to computer options.

Jared,

The quote for 60 laptop computers with carts was \$65,700 (30 per cart). This is the request made for Alpine 3, and Tulare (60 each). For 30 desktop computers in Hanford, the quotes was, \$41,500. This assumes that they will use their existing furniture.

Best,

Chris

Notes (optional): We understand that these amounts are larger than the amount set aside typically for above based projects and hope that other funding sources such as BSSOT will help us meet this request. We simply want it documented in our Program Review and hope the other funding (BSSOT) that we have been working with will fund our computer needs.

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Cost of Request (Nothing will be funded over the amount listed.): 175000

Link Actions to District Objectives

District Objectives: 2018-2021
District Objective 2.1 - Increase the percentage of students who earn an associate degree or certificate (CTE and Non-CTE) by 5 percentage points over three years
District Objective 2.2 - Increase the number of students who transfer to a four-year institution by 10 percent over three years
District Objective 2.3 - By 2021, increase the percentage of students who complete transfer-level English by 15 percentage points and transfer-level math by 10 percentage point with their first year.
District Objective 3.1 - By 2021, increase the placement rates into transfer-level English and transfer-level math for targeted groups that fall below the District Average.
District Objective 3.2 - By 2021, increase the percentage of students in targeted groups who complete transfer-level English (by 10 percentage points) and transfer-level math (by 5 percentage points) within their first year