

Comprehensive Program Review Report



Program Review - Mathematics

Program Summary

2023-2024

Prepared by: Matt 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. Over the past year we have begun to address AB1705. As part of this we have identified MATH 044 as a liberal arts class and have removed it completely from the STEM sequence.

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 15 full-time faculty members in the mathematics unit. Over the past year, we have a net loss of two adjunct instructors and have hired four adjunct instructors giving us a net gain in the department of two-adjunct instructors. There is a likely retirement of a full-time faculty member at the end of the 2023-2024 academic year.

As we look begin to look at our courses in consideration of AB1705, , we now examine our courses as Transfer Level (Math 5, 10, 11, 21,35, 44, and 70) 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.

MATH 010

		Fall 2022		Spring 2023		
		Success	Enrolled	Success	Enrolled	
Face-to-Face	No Support		13	29	29	42
	With Support		53	82	22	40
Hybrid	No Support	4	15	NA	NA	
	With Support	4	10	NA	NA	
Online	No Support	36	53	27	38	
	With Support	NA	NA	NA	NA	

MATH 021

		Fall 2022		Spring 2023		
		Success	Enrolled	Success	Enrolled	
Face-to-Face	No Support		299	428	282	440
	With Support		102	255	145	290
Hybrid	No Support	33	56	NA	NA	
	With Support	7	30	NA	NA	
Online	No Support	272	574	197	326	
	With Support	132	282	53	132	

MATH 044

		Fall 2022		Spring 2023		
		Success	Enrolled	Success	Enrolled	
Face-to-Face	No Support		36	57	31	56

	With Support	33	88	23	45
Hybrid	No Support	24	34	NA	NA
	With Support	15	29	NA	NA
Online	No Support	56	87	29	37
	With Support	36	77	40	68

MATH 035

		Fall 2022		Spring 2023	
		Success	Enrolled	Success	Enrolled
Face-to-Face	No Support		28	53	32
	With Support		28	47	20
Online	No Support	56	80	57	84
	With Support	NA	NA	NA	NA
Dual	No Support	15	19	NA	NA

Combined

		% Success
Dual Enrollment	Face-to-Face	78.9%
Face-to-Face	No Support	64.2%
	With Support	48.1%
Hybrid	No Support	58.1%
	With Support	37.3%
Online	No Support	57.1%
	With Support	46.7%

There was a total of 2256 students that successfully passed one of these classes during the 2022-2023 academic year (fall and spring) compared to 1764 students during the 2021-2022 academic year. This would constitute an 27.9% increase in the number of students that successfully completed these courses. Over the past two years, a decrease in the percentage of students that successfully completed one of these courses was reported. This years marks a dramatic increase.

In fall 2020 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. From the 2021-22 academic year to the 2022-23 academic year, we have twice the number of students enrolled in MATH 044 (289 to 578). We continue to remain 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.

MATH 011

		Fall 2022		Spring 2023	
		Success	Enrolled	Success	Enrolled
Face-to-Face		6	15	33	43
Online		32	47	29	36

MATH 005

		Fall 2022		Spring 2023	
		Success	Enrolled	Success	Enrolled
Face-to-Face		64	112	39	86
Hybrid		NA	NA	15	26
Online		28	84	34	62

MATH 070

		Fall 2022		Spring 2023	
		Success	Enrolled	Success	Enrolled
Face-to-Face		13	21	18	20

MATH 154

		Fall 2022		Spring 2023	
		Success	Enrolled	Success	Enrolled
Dual Enrollment		NA	NA	16	17

Face-to-Face	18	33	26	29
Online	32	46	36	45

For all these courses, the success rate increased from 21-22 academic year to the 22-23 academic year. MATH 005's success rate increased from 38.6% to 48.6%. MATH 011's success increased from 68.3% to 70.9%. MATH 070's success increased from 55.1% to 75.3%. And MATH 154's success increased from 52.9% to 75.3%. This indicated a phenomenal change since all the courses had experienced a decrease in success rates from the 20-21 to 21-22 academic years. This increased success combined with increased enrollment provided an increase in throughput increasing throughput from 277 students in the 21-22 academic year to 489 students in the 22-23 academic year (a 58% increase)

For Major courses

MATH 065

	Fall 2022	Spring 2023		
	Success	Enrolled	Success	Enrolled
Face-to-Face	73	164	42	116

MATH 066

	Fall 2022	Spring 2023		
	Success	Enrolled	Success	Enrolled
Face-to-Face	19	59	49	82

MATH 067

	Fall 2022	Spring 2023		
	Success	Enrolled	Success	Enrolled
Face-to-Face	36	49	17	31

MATH 080

	Fall 2022	Spring 2023		
	Success	Enrolled	Success	Enrolled
Face-to-Face	8	13	NA	NA
Hybrid	NA	NA	28	38

MATH 081

	Fall 2022	Spring 2023		
	Success	Enrolled	Success	Enrolled
Face-to-Face	*	*	NA	NA
Hybrid	NA	NA	14	24

*too few students for dashboard to display results

We saw another significant drop in success for these classes, though not as severe as the one experienced last year. STEM students are still struggling as we continue to transition past the COVID pandemic as well as accommodate AB705 and AB1705. This decrease success combined with slightly lower enrollment in these course (down to 591 from 632), we have a dramatic decrease in throughput (293 down from 360).

The FTES generated by math courses in 2022-223 is 823.60, which is up 88.9 FTES from the previous year. This is the first increase in FTES that we have seen since the implementation of AB705. WE have also seen a second consecutive year of an increase in the department's efficiency (FTES/FTEF). This year the FTES/FTEF was 16.4 up from 15.1 last year and up significantly from 14.5 two years ago. Though this is below the target ratio of 17.5, it marks a continued positive change since AB705 implementation.

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), CMC^3 (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 and AB1705, 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. In the upcoming year, we are looking to continue to address AB1705 and the impact that it will have on math placement and our course sequence.

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 Lab. 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 and AB1705 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. Once the guidelines for validating placement in MATH 035 and 054 have been published by the Chancellor's Office, we will need to devise a strategy for validating our course placement. Finally, to ensure quality education, we will need to have the appropriate equipment and supplies for our classes. Last year we did have one computer lab remodeled and a classroom converted into a computer lab. This will allow us to have more flexibility in offering MATH 021 courses in future.

We will need to continue promoting the changes that are occurring with the math curriculum to the campus. MATH 154 was recently approve of UC transfer changing its course number to MATH 054. The placement model was adjusted and will take effect this September. With the potential of additional support courses, and the upcoming changes to curriculum and placement, it is critical to keep the campus community informed regarding these changes and the impact they may have. We are also looking at better ways to monitor student activity in a computer lab setting. Two year we purchased licenses for NetOp Vision and last year a base budget augmentation was approved to continue this license. This software allows an instructor to monitor student activity on each computer in the computer lab giving the instructor the ability to identify irregularities in student's computer activity. We will need submit another base budget augmentation to include our newest computer lab in the licenses for upcoming years.

Describe any external opportunities or challenges.: Over the past year we have had two major challenges: adjusting to the post-COVID educational needs of students and AB1705.

Now that the crisis of the pandemic has passed, we now focus on its impact on the students that we are coming to us have had their high school experience impacted by the pandemic. We also pick up where we left off in regards to addressing AB705 and AB1705.

In regards to the impact the pandemic had on incoming students, we are finding, to an even greater degree, gaps in the students' knowledge as it pertains to foundational concepts in mathematics. To help identify and address this issues, we are taking 10-15 minutes out of each division meeting to discuss standards in our math courses. We are beginning by identifying topics in our calculus where the student's difficulty with the topic stems from a prerequisite course and not the current subject matter. The end goal is to develop a set of materials that can be provided to instructors (new and current) that are teaching precalculus, so the these topics can be covered with the appropriate level of rigor.

Regarding AB705 and AB1705, we know that we will need to validate placement into our precalculus course and will begin that work once guidance has been provided by the Chancellor's Office. We know that this is potentially a large amount of work and that it may lead to the necessity to create additional support course (primarily for calculus)

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 two years. As the demands created by the pandemic lessen, we will shift our attention to updating SLOs and transition back to in-person classes.

Our biggest external challenges come from the State Legislature (AB1705) and the Chancellor's office. As we begin to address AB1705, we await guidance from the Chancellor's office. AB1705 will have the biggest impact on our STEM courses. Specifically, on the pathway to MATH 65.

Overall SLO Achievement: The pandemic dramatically impacted our work on SLOs. We have just recently become current on most if not all of our 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. This year the program level outcomes will be reassessed/verified.

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: Kaweah 204A - Remodel

Remodel Kaweah 204A with new desks and wiring.

Leave Blank:

Implementation Timeline: 2022 - 2023

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Identify related course/program outcomes:

Person(s) Responsible (Name and Position): Matthew Bourez

Rationale (With supporting data): Currently there is only an extremely narrow area between the front row of desks and the white board. This leaves very little room for the instructor to maneuver as they present lectures and direct activities for their classes. The new layout will not only allow more room for the instructor to present material, it will also add two additional computers to the lab.

Priority: High

Safety Issue: No

External Mandate: No

Safety/Mandate Explanation:

Update on Action

Updates

Update Year: 2023 - 2024

09/12/2023

Status: Action Completed

Classroom was remodeled over the summer. Thus far the reactions to the room have been positive. There is more room at the front of the room for the instructor to present as well as having the instructor cart rotated to face the class. The remodel also allowed the lab printer to be moved back into the classroom.

Impact on District Objectives/Unit Outcomes (Not Required): Improved teaching environment and the addition of two computers to the computer lab (potential for an increased class size)

Resources Description

Equipment - Instructional - Remodel of Kaweah 204A including new wiring (both electrical and network), new desks, and new computers (Active)

Why is this resource required for this action?: This resource will improve the quality of instruction in Kaweah 204A and add additional seats. It will allow more room for the instructor to present material at the front of the room and move more free through the room. It will reorient the instructor station so that the instructor can face the class while at the computer.

Notes (optional):

Cost of Request (Nothing will be funded over the amount listed.): 140000

Related Documents:

[Kaweah 204A Computer Lab Remodel.pdf](#)

[Kaweah 204A Cost Estimate.docx](#)

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Link Actions to District Objectives

District Objectives: 2018-2021
District Objective 1.1 - The District will increase FTES by 1.75% over the 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
District Objectives: 2021-2025
District Objective 1.1 - The District will increase FTES 2% from 2021 to 2025.
District Objective 2.1 - Increase the number of students who earn an associate degree or certificate (CTE and non-CTE) by 5% from 2021-2025.
District Objective 2.2 - Increase the number of students who are transfer-ready by 15% and students who transfer to four-year institutions by 10% from 2021-2025.
District Objective 2.3 - Increase the percentage of students who complete both transfer-level Quantitative Reasoning and English by 10 percentage points by the end of their first year from 2021-2025.

Action: Base Budget Augmentation - Technology Refresh

Submit a Base Budget Augmentation for the math division budget to allow for the refresh/replacement of technology purchased for faculty using COVID funds. In particular iPads and Rhode microphones will require routine replacement on an approximate 5-year rotation

Leave Blank:

Implementation Timeline: 2022 - 2023

Leave Blank:

Leave Blank:

Identify related course/program outcomes:

Person(s) Responsible (Name and Position): Matthew Bourez

Rationale (With supporting data): In order to continue to offer courses in a variety of formats, particularly HyFlex, technology needs to be maintained. Since the technology that allowed us to effectively begin teaching in these modalities were purchased with one-time COVID funds, they are not a part of the regular refresh cycle for school technology. However, this technology is crucial if we are to continue to offer these courses.

Priority: Medium

Safety Issue: No

External Mandate: No

Safety/Mandate Explanation:

Update on Action
<p><i>Updates</i></p> <p>Update Year: 2023 - 2024 09/12/2023</p> <p>Status: Action Discontinued</p> <p>A base budget request was submitted and denied. We were told that iPads and other technology were become part of the 5-year refresh cycle.</p> <p>Impact on District Objectives/Unit Outcomes (Not Required):</p>

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Adjustment to Base Budget - Equipment replacement and maintenance. (Active)

Why is this resource required for this action?: iPads and Rhode microphones will require routine replacement on an approximate 5-year rotation

Notes (optional):

Cost of Request (Nothing will be funded over the amount listed.): 4000

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 2.3 - 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 3.2 - 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

District Objectives: 2021-2025

District Objective 1.1 - The District will increase FTES 2% from 2021 to 2025.

District Objective 2.1 - Increase the number of students who earn an associate degree or certificate (CTE and non-CTE) by 5% from 2021-2025.

District Objective 2.3 - Increase the percentage of students who complete both transfer-level Quantitative Reasoning and English by 10 percentage points by the end of their first year from 2021-2025.

District Objective 3.1 - Reduce equity gaps in course success rates across all departments by 40% from 2021-2025.

Action: AB1705 Changes

Examine the changes needed in order to comply with AB1705 and work towards making those changes for a Fall 2024 implementation.

Leave Blank:

Implementation Timeline: 2022 - 2023

Leave Blank:

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Identify related course/program outcomes:

Person(s) Responsible (Name and Position): Matthew Bourez

Rationale (With supporting data): AB1705 will likely become law in October 2022. The law will require some key changes to curriculum and placement from what is currently done in the math department.

Priority: High

Safety Issue: No

External Mandate: Yes

Safety/Mandate Explanation: Complying with AB1705 will require changes in curriculum and placement at COS

Update on Action

Updates

Update Year: 2023 - 2024

09/12/2023

Status: Continue Action Next Year

Math Placement was rewritten to comply with the language of AB1705. This change will take effect this September/October with the intent of properly placing students registering for the 2024-25 academic year.

Additional work is still needed. Once the Chancellor's Office provided guidance for validating placement into precalculus course, we will need to reinvestigate our placement as it pertains to precalculus. This guidance may also generate the need for the creation of additional support classes. We also intend to look at other methods of support (tutorial services, SI, MESA, etc) as it

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pertains to compliance with AB1705

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

Link Actions to District Objectives

District Objectives: 2021-2025

District Objective 2.2 - Increase the number of students who are transfer-ready by 15% and students who transfer to four-year institutions by 10% from 2021-2025.

District Objective 2.3 - Increase the percentage of students who complete both transfer-level Quantitative Reasoning and English by 10 percentage points by the end of their first year from 2021-2025.

District Objective 3.1 - Reduce equity gaps in course success rates across all departments by 40% from 2021-2025.

Action: Base Budget Augmentation - NetOp Vision

Submit a base budget augmentation to allow the department to cover the ongoing cost of NetOP Vision software for monitoring student work in a computer lab.

Leave Blank:

Implementation Timeline: 2022 - 2023

Leave Blank:

Leave Blank:

Identify related course/program outcomes:

Person(s) Responsible (Name and Position): Matthew Bourez

Rationale (With supporting data): Monitoring students work in a computer lab setting from the instructor station is key to maintaining a productive learning environment

Priority: High

Safety Issue: No

External Mandate: No

Safety/Mandate Explanation:

Update on Action

Updates

Update Year: 2023 - 2024

09/12/2023

Status: Continue Action Next Year

The base budget augmentation was approved and we are now able to pay the license for the monitoring software out of the Math department budget. We did add one additional lab this year, so we will need to submit another base budget augmentation this February to include the cost of the license for this new lab.

Faculty that have been using the monitoring software have provided positive feedback. A greater effort can be made to make faculty aware of the software and its possible uses.

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

Resources Description

Adjustment to Base Budget - NetOP Vision software for monitoring student work in a computer lab, we have three computer labs, plus two additional labs. (Active)

Why is this resource required for this action?: Math 21 courses require computer labs. The Math Department uses NetOP Vision software to monitor student computers during lab.

Notes (optional):

Cost of Request (Nothing will be funded over the amount listed.): 5200

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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 2.3 - 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 3.2 - 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
District Objectives: 2021-2025
District Objective 1.1 - The District will increase FTES 2% from 2021 to 2025.
District Objective 2.1 - Increase the number of students who earn an associate degree or certificate (CTE and non-CTE) by 5% from 2021-2025.
District Objective 2.3 - Increase the percentage of students who complete both transfer-level Quantitative Reasoning and English by 10 percentage points by the end of their first year from 2021-2025.
District Objective 3.1 - Reduce equity gaps in course success rates across all departments by 40% from 2021-2025.