



**Instructional Program Review – Annual Update  
2022**

Date:	3/26/2022
Program and Department:	Mathematics/Mathematical Sciences
CTE Program?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Additional programs included in this review:	N/A
Date of last comprehensive review:	2020/2021
Submitted By:	Dominic Dal Bello, Eui Chung, Scott King
Attachments (* as needed):	<input type="checkbox"/> 6-year assessment plan – All programs, when applicable <input type="checkbox"/> 2-year scheduling plan <input checked="" type="checkbox"/> Justification for Resource Requests (if needed)

### I. Alignment of the Program with the AHC Mission

**AHC Mission: Allan Hancock College fosters an educational culture that values equity and diversity and engages students in an inclusive learning environment. We offer pathways that encourage our student population to achieve personal, academic, and career goals through coursework leading to associate degrees, certificates, transfer, and skills building.**

#### a. Have there been any changes that would require a change to your Program Mission?

No. There have not been any changes that would require a change to our Program Mission.

#### b. Explain how your program mission aligns with the college mission.

The college mission and values can be found here:

<https://www.hancockcollege.edu/about/mission.php>

The mission of the Department of Mathematics is to provide quality educational opportunities related to mathematics that enhance student learning to enable students to reach their educational, occupational, or personal goals. The objectives of the courses in the program are to provide:

- Courses for transfer to a four-year university;
- Courses for students to meet their vocational/technical degree goals; and
- Developmental courses for students to satisfy prerequisites for college level courses.

These objectives meet the mission of the institution. The mission of Allan Hancock College is to provide quality educational opportunities that enhance student learning and foster the creative, intellectual, cultural, and economic vitality of our diverse community. The Mathematics program aligns with all of the goals for the Student Learning & Success described in the college's Strategic Plan; Provide educational programs and comprehensive student support services that promote student success and respond to qualitative and quantitative assessment of learning. The Mathematics program at AHC also provides courses that enable students to complete lower division prerequisites and general education requirements for transfer to institutions of higher learning and/or received an Associate's degree in Mathematics, Associate's degree in Physics Emphasis, and Associate's degree in Computer Science Emphasis.

## II. Student Success, Program Accessibility and Program Capacity

\*NO data analysis required this year.

- a. **Describe how the program works to promote student success (completions job placement, transfer). Include teaching innovations and use of academic and student support.**

The Mathematics faculty continue to work with Math Center and STEM/MESA Center to offer tutorial services to promote student success.

The Mathematics faculty continuously modify and update assessments to encourage student success and to align teaching with PSLOs and ILOs.

The Mathematics Department has worked to maximize the likelihood that a student will enter and complete transfer-level mathematics within a one-year time frame in accordance with AB 705.

We offer online courses for most of our mathematics courses in the curriculum. These courses give many of our students more options and flexibility when making their educational choices. Also, many of our courses have adopted zero cost textbooks or OER textbooks. As a consequence, we believe the zero-cost option has positively impacted our students.

The Math Center continues to provide excellent support and services for our students. Some of the resources that the Math Center provides includes free tutoring, a welcoming environment for individual or group study, in-house loans of current textbooks, supplemental books and videos for check out, calculator loans, and various handouts on mathematics topics.

The MESA/STEM program continues to be another excellent support program for our students. Through the program, our students have developed important academic skills necessary for success in the calculus-based mathematics courses at the college and beyond.

The success rates and retention rates for the mathematics program are above the set standard as given in the 2018 Annual Update for the Program Review. We received data from the office of Institutional Research and Planning and a few of the results are listed below:

The overall success rate was 62.1% and the overall retention rate was 79.9% (Both are above the set standard).

The success rates for Females and Males were 63.6% and 61.0%, respectively. The success rates by age were as follows:

Under 20: 57.9%  
20-24: 63.7%  
25-29: 64.6%  
30-34: 71.0%  
35-39: 77.9%  
40-49: 72.7%  
50+: 75.5%

The success rates by ethnicity were as follows:

Asian: 66.1%  
Black: 53.9%  
Filipino: 65.6%  
Hispanic: 59.2%  
Native American: 58.9%  
Pacific Islander: 46.0%  
White: 66.7%  
Unknown: 57.3%

One group that was disproportionately impacted was the under 20 age group. One reason for the lower success rate may be due to the students' expectation level of the required work needed to succeed in a college level mathematics course. However, the mathematics faculty is committed and dedicated to ensuring student retention and success regardless of gender, age, and ethnicity. We will continue to provide our students with the necessary assistance and skills needed for success in our curriculum and at the four-year university environment.

- b. List any notable accomplishments of the program (student awards, honors, or scholarships can be listed here also).**

Mathematics Department works continuously to help students receive scholarships and earn internships.

Mathematics Department has an endowment to award one Allan Hancock College Mathematical Scholarship via AHC Foundation per year. The amount of \$1600 will be awarded in 2022.

Mathematics Department continued to seek many opportunities to leverage other financial resources including grants, donations, and partnerships.

MESA students transferred to university at higher rates than the general population and had higher GPAs.

Demographic data indicated MESA students continue to have a notably higher percentage of Hispanic, low income, and first-generation students than the college in general. The data reflected the successful outreach efforts to recruit economically and educationally disadvantaged students.

### **III. Quality and Innovation in the Program and Curriculum Review**

- a. Are you on track in your assessment plan for course and program SLOs? If not, please explain why.**

Mathematics Department is on track in the assessment plan for course and program SLOs. We have changed the CSLOs to match the Program SLOs. In doing so, we have simplified the assessment process while providing a more accurate mapping between the CSLOs and PLOs. Prior to switching to the PSLOs, the department assessed all SLOs for all mathematics courses. We assessed the Program SLOs (#1 and #2) in Fall 2021. We are scheduled to assess the Program SLOs (#3 and #4) in Spring 2022. As a department, we have collaborated on assessment and have had many positive discussions on SLOs at Math Retreats in August 2021 and in January 2022.

- b. Have you shared your assessments or improvement plans with your department, program or advisory committee? If so, what actions resulted? If not, how do you plan to do so in the future?**

Yes. We have shared the assessments and improvement plans with our department. After SLOs are measured, mathematics faculty members shared SLO information and improvement plans at Math Retreats on January 20, 2022. We also discussed SLOs and their effectiveness. We use the same measures with part-time faculty as well. We will make modifications to SLOs when necessary.

- c. Did any of section, course or program improvement plans indicate that your program would benefit from specific resources in order to support student learning and/or faculty development? If so, please explain.**

Yes. Students need to continue to have access to textbooks in the Math Center. Math Center needs at least five copies of the book. Graphing Calculators (TI-82, TI-83, TI-83 PLUS, TI-84) are also important. Our students need to continue to have the calculator loan program in place in the Math Center (especially in Statistics class, Math 123). 350 graphing calculators were loaned out to students in Spring 2022. Math faculty members referenced the importance of the Math Center as a resource for students.

Math faculty members inform students of support services such as online tutoring, on campus tutoring, Math Center, Tutorial services, and the MESA through classroom presentation and other communications.

With onset of Covid - 19 and subsequent move to online learning, Mathematics program identified specific needs to provide variety learning modalities (traditional DE, Online LIVE, Hybrid-Room and Zoom, and Traditional In-Class mode).

- d. In reviewing your outcomes and assessments have you identified any and all that indicate a modification should be made to the course outline, the student learning outcomes or the program outcomes? Please state what modifications you will be making.**

We have changed CSLOs to match the Program SLOs. We have simplified the assessment process. Each course will be on the same schedule, and the mapping will be more accurate.

No modifications are needed at this time. With the change in approach from Course Learning Outcomes to Program Learning Outcomes, we do not think an update is necessary.

- e. **Have all course outlines been reviewed within the last 5 years? If not, please explain the plan to bring course outlines up to date and include timelines for the review and submission to AP&P.**

Yes. All course outlines have been reviewed during our last Comprehensive Program Review in Year 2020/2021.

- f. **For CTE courses/programs only, as per §55003, have prerequisites, corequisites and advisories (PCAs) for courses and/or programs been reviewed within the last 2 years?**

N/A

#### **IV. Focus and Engagement of the Program**

- a. **Summarize major trends and opportunities as well as challenges that have emerged in the program.**

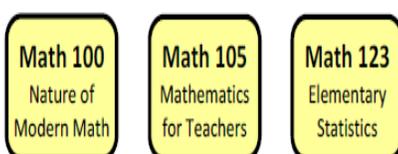
1. During the pandemic, the number of student's enrollment was lower than before pandemic. However, some classes were full and had several waitlists. All faculty are working above and beyond to accommodate the current situation. Our program offered courses in different modalities (Traditional DE, Online Live, Hybrid, and Traditional In-Class) to accommodate students' needs.
2. Starting in Fall 2022, Hancock College will no longer be offering below transfer level math courses due to the state law, AB 705, coming from the Chancellor's Office. As a result, the following courses will no longer be offered at Allan Hancock College starting in Fall 2022:
  - Math 521- Foundations of Mathematics
  - Math 309- Algebra and Math Literacy
  - Math 311- Algebra 1
  - Math 321- First Year Geometry
  - Math 331- Algebra 2
3. Starting in Fall 2022, support courses will be offered online (Math 135-S, Math 131-S, Math 141-S, Math 123-S).
4. Mathematics program reduced the number of Math 331, Math 311, and Math 309 sections offered in Spring 2022 to comply with the AB 705 transition, as well as due to reduced enrollments caused by COVID.

5. Mathematics faculty members had to make new Math Pathways to fully comply with AB 705 state guidelines.

## Mathematics Success Sequence, Fall 2022

### Statistics and Liberal Arts Math

Math 123S supports Math 123; it is highly recommended, and in some cases is required.



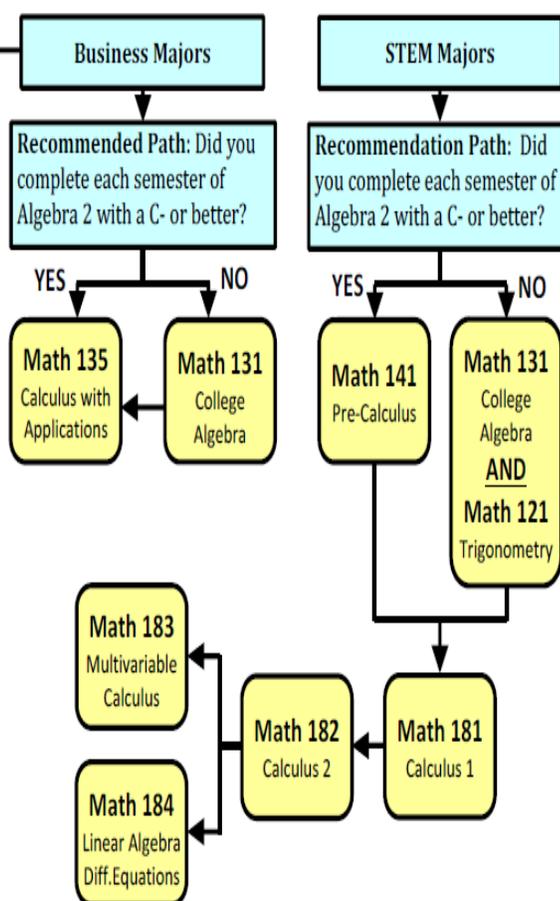
#### Math Courses, Units (Contact Hours)

100 Nature of Modern Mathematics .....	3 (3)
105 Mathematics for Teachers .....	4 (5)
121 Trigonometry .....	3 (3)
123 Elementary Statistics .....	4 (5)
131 College Algebra .....	3 (4)
135 Calculus with Applications .....	4 (4)
141 Pre-Calculus .....	6 (6)
181 Calculus 1 .....	4 (5)
182 Calculus 2 .....	4 (5)
183 Multivariable Calculus .....	4 (5)
184 Linear Algebra/Differential Equations ....	5 (5)

Updated: 3/17/22

### Business and STEM

Enrollment in the appropriate support course (Math 131S, 135S, 141S), is highly recommended, and in some cases is required.



6. Due to AB 705, Mathematics program had to revise the Graduation Requirement for year 2022-2023 as below.

#### **New Graduation requirement (effective 2022-2023)**

1. Pass one of the following courses with a grade C or better:
  - any 100-level math course of at least three units,
  - Math 309, Math 321, or Math 331 (Note: these courses will no longer be offered after Summer 2022).
2. Successful completion of Algebra 2 or higher at an accredited collegiate institution.
3. A score of 3 or higher on AP Statistics or any of the AP Calculus exams.

#### **Old Graduation requirement**

1. Pass ~~one of the following courses~~ with a grade C or better: ~~Math 309, Math 321, Math 331, or~~ any 100-level math course of at least three units
2. Successful completion of Algebra 2 or higher at an accredited collegiate institution.
3. A score of 3 or higher on AP Statistics or any of the AP Calculus exams.

~~**NOTE:** Students should consult a counselor to see if Math 309 is best for them. STEM majors and others who intend to take Math 121 or higher, should take Math 331.~~

7. Due to AB 705, Mathematics program is in the process of revising Math Placement Guideline.

## Allan Hancock College

### Math Placement Guidelines

#### HIGH SCHOOL GRADUATES

##### Pathway 1:

*Nature of Modern Math (100)*

No pre-requisite. Does not have a support course, so no need to use high school GPA.

##### Pathway 2:

*Math for Teacher (105)*

No pre-requisite. Does not have a support course, so no need to use high school GPA.

*Statistics (123)*

HSGPA $\geq 3.0$ OR HSGPA $\geq 2.3$ & C or Better in HS Precalculus	Register for 123
$2.3 \leq \text{HSGPA} < 3.0$	Register for 123 Strongly recommend 123s
HSGPA $< 2.3$	Register for 123 Require 123s

##### Pathway 3: B-STEM

*PreCalculus (141), College Algebra (131), Business Calculus (135), Trigonometry (121)*

Students who have not taken Algebra II need to take 131 (College Algebra) prior to their B-STEM Course.

HSGPA $\geq 3.4$ OR HSGPA $\geq 2.6$ & enrolled in HS Calculus	Register for 141/131/135/121
HSGPA $\geq 2.6$ OR Enrolled in HS Precalculus	Register for 141/131/135 Strongly recommend 141s/131s/135s Register for 121. There is no support.
HSGPA $< 2.6$ AND No HS Precalculus	Register for 141/131/135 Require 141s/131s/135s Register for 121. There is no support.

*Calculus 1 (181)*

Math 181 – placement via the multiple [measures](#) crosswalk

- HS GPA  $\geq 3.2$  and enrolled in HS Calculus
- OR
- HS GPA  $\geq 3.2$  with "C" or better in HS Precalculus
- OR
- HS GPA  $\geq 3.6$  HS Trigonometry with C or better

## HIGH SCHOOL EQUIVALENCY EXAMS

HIMA 15-20 GEDM 165+	SLAM: 123 or 100 B-STEM: 131 or 121 No Support
HIMA 8-14 GEDM 145-164	SLAM: 123 or 100 B-STEM: 131 or 121 Recommend Support
HIMA 1-7 GEDM $\leq$ 144	SLAM: 123 or 100 B-STEM: 131 or 121 Require Support

## STUDENTS WITHOUT A GPA

- Current high school freshman or sophomore
- Student with international coursework in mathematics
- Homeschooled high school student
- High school diploma from Credit Recovery school
- Students out of HS for 10+ years
- Concurrent Enrollment or College Now

### Nature of Modern Math (100), Math for Teachers (105)

Can enroll similar to other students. These classes currently do not have a support course.

### Statistics (123)

Has taken a class after Algebra 1 such as Geometry or Algebra II	Register for 123 Strongly recommend 123s
Has NOT taken a class after Algebra 1	Register for 123 Require 123s

### B-STEM (141/131/135/121)

The prerequisite for these courses is Algebra 2

Has passed Algebra 2 with a C or better	Register for 141/131/135 Strongly recommend 141s/131s/135s
Has NOT passed Algebra 2 Has passed Algebra 1 with a C or better	Register for 131 Require 131S

8. Assembly Bill 705 (AB 705) requires that all incoming students be placed into transfer level mathematics during their first year of community college. To ensure students take right transfer math level courses in Fall 2022, we created “Which Class to Take” Table.

AA/AS/CTE	Majors requiring Statistics and/or Liberal Arts Math		Business, Science, Computer Science, Engineering, Mathematics Majors	
	Pathway #1	Pathway #2a	Pathway #2b	Pathway #3a
If you are planning to pursue an associate degree <u>and</u> are NOT TRANSFERRING to a university	If you are planning to major in a non-technical field such as History, English, Music, etc., <u>and</u> ARE TRANSFERRING to a university	If you are planning to major in a non-technical field such as Psychology, Criminal Justice, Sociology, etc., <u>and</u> ARE TRANSFERRING to a university	If you are planning to major in Business, Science, Computer Science, Engineering or Math, <u>and</u> have NOT passed Algebra 2 or equivalent with a C- or better	If you are planning to major in Business, Science, Computer Science, Engineering or Math, <u>and</u> HAVE passed Algebra 2 or equivalent with a C- or better
<b>We recommend you:</b> Enroll in Math 100, Nature of Modern Math	<b>We recommend you:</b> Enroll in Math 100, Nature of Modern Math (CSU) <b>OR</b> Enroll in Math 123, Statistics (UC, CSU) <b>OR</b> Enroll in Math 105, Math for Teachers	<b>We recommend you:</b> Enroll in Math 123, Statistics	<b>We recommend you:</b> Enroll in Math 131, College Algebra  <i>Business majors</i> will also need to take Math 123  <i>STEM majors</i> should then take Math 121, Trigonometry or Math 141, Precalculus	<b>We recommend you:</b> Enroll in Math 141, Precalculus (STEM) <b>OR</b> Enroll in Math 135, Business Calc (Business majors) <b>OR</b> Enroll in Math 181, Calculus 1 if you have completed Trigonometry, Precalculus or Calculus in high school and have a high enough GPA
	If your high school GPA is below 3.0, we recommend you take the support course, Math 123S.  If your high school GPA is below 2.3, we require you take the support course, Math 123S.	If your high school GPA is below 3.0, we recommend you take the support course, Math 123S.  If your high school GPA is below 2.3, we require you take the support course, Math 123S.	We highly recommend you take the support course, Math 131S.  If your high school GPA is below 2.6, we require you take the support course, Math 131S.	If you received a C+ or lower in Algebra 2, we highly recommend you take the support course, Math 141S or Math 135S.  If your high school GPA is below 2.6, we require you take the support course, Math 141S or 135S.

9. We created “Think Ahead Letter” to be distributed in Spring 2022 math courses.

Department Letter – Thinking Ahead Letter, for current 300 and 500 students

Dear Students,

Assembly Bill 705 (AB705) requires that all incoming students be placed into transfer-level mathematics during their first year of community college. To comply with AB705, the Allan Hancock College Mathematical Sciences Department can only offer transfer-level courses, starting Fall 2022. Below transfer-level math courses (Math 521, 309, 311, 321 and 331), can no longer be offered.

If you are currently registered in a Math 300 or 500 level course at Allan Hancock College, please note that you will be unable to repeat the course for a higher grade after Summer 2022. This means, if you are in danger of a poor grade, it would be in your best interest to change your grade to Pass/No Pass (P/NP), or contact a counselor regarding implications due to dropping the course. The Pass/Not Pass option deadline for Spring 2022 is May 20.

Please watch for further information regarding which transfer course would be the best choice for you. As always, if you have questions or concerns, please contact an academic counselor or a math faculty.

Thank you,

Allan Hancock College Mathematical Sciences

10. We installed new technologies in classrooms M-201, M-311, M-312, M-43-, M-431, M-438, W-23, W-26, and H-105 to offer Hybrid (Room and Zoom) courses.
11. Math continues to have high demand due to it being required for graduation or transfer. Many majors require students to finish higher-level math, and there are more students interested in STEM fields. The number of Calculus courses offerings (Math 181 and Math 182) has increased.
12. Since Covid-19, Math Center has offered online tutoring services via zoom.

13. We are still down 3 full-time faculty members from 16 full-time faculty members. We are expecting to hire 2 full-time faculty members for Fall 2022. (Please see attached)



TO: Alberto Restrepo  
President, Allan Hancock College Academic Senate

COPIES TO: Allan Hancock College Board of Trustees  
Academic Senate Exec  
Allan Hancock College Cabinet

FROM: Kevin G. Walther, Ph.D.

DATE: January 31, 2021

SUBJECT: Faculty Hiring Positions for Spring 2022

Alberto,

Last week we discussed faculty hiring processes that will take place this spring for new faculty who will start in the Fall of 2022. We also discussed our substantial drop in enrollment that we have seen since Fall of 2019 that must be considered in making long-term hiring decisions. With the current uncertainty in the state budget and the looming fiscal cliff, we cannot take on a large expansion of faculty positions this year.

We currently have 14 positions that are vacant from retirements or other departures. Our plan for this year is replace eight of the vacant positions and to add another biology position from the priority list. We will also structure the announcement for chemistry and math to allow for the hiring of an additional faculty member from the priority list if we have a deep enough pool in those areas.

The list of positions to be posted will include the following:

- Computer Networking and Electronics Technology
- Vet Tech
- Administration of Justice
- English (2 positions)
- Math (2 positions with a possibility of a third)
- Chemistry (with a possibility of hiring a second)
- Biology

The remaining vacancies from retirements will remain on the list as priority hires for the 2023-2024 academic year once we have more clarity around the budget.

**b. List any (internal or external) conditions that have influenced the program in the past year.**

**Covid-19 influenced our program since year 2020 when the pandemic started. The number of student enrollments was lower than usual in most math courses.**

1. Staffing: Two full-time faculty members retired during pandemic.
2. Learning Modalities: Our program is offering courses in different modalities (Traditional Distance Education, Online LIVE, Hybrid-Room and Zoom, and Traditional In-Class).

**Mathematics Program is notified that by fall 2022 the California Community College system must transition to full implementation of AB 705.**

1. Assembly Bill 705 (AB 705) requires that all incoming students be placed into transfer level mathematics during their first year of community college. To comply with AB 705, the Mathematics Sciences Department can only offer transfer-level course starting Fall 2022. Below transfer-level (Math 521, Math 309, Math 311, Math 321, and Math 331), can no longer be offered.
2. Our program will increase the number of Math 123 sections and Math 100s.

**Due to AB 705, our program had to reduce the number of developmental math courses (such as Math 331, Math 311, and Math 309) offered in Spring 2022.**

1. The number of Algebra 2 (Math 331) sections were reduced in Spring 2022.
2. The number of Algebra 1 (Math 311) sections were reduced in Spring 2022.
3. The number of Algebra and Math Literacy (Math 309) sections were reduced in Spring 2022.

(Please see the provided data below)

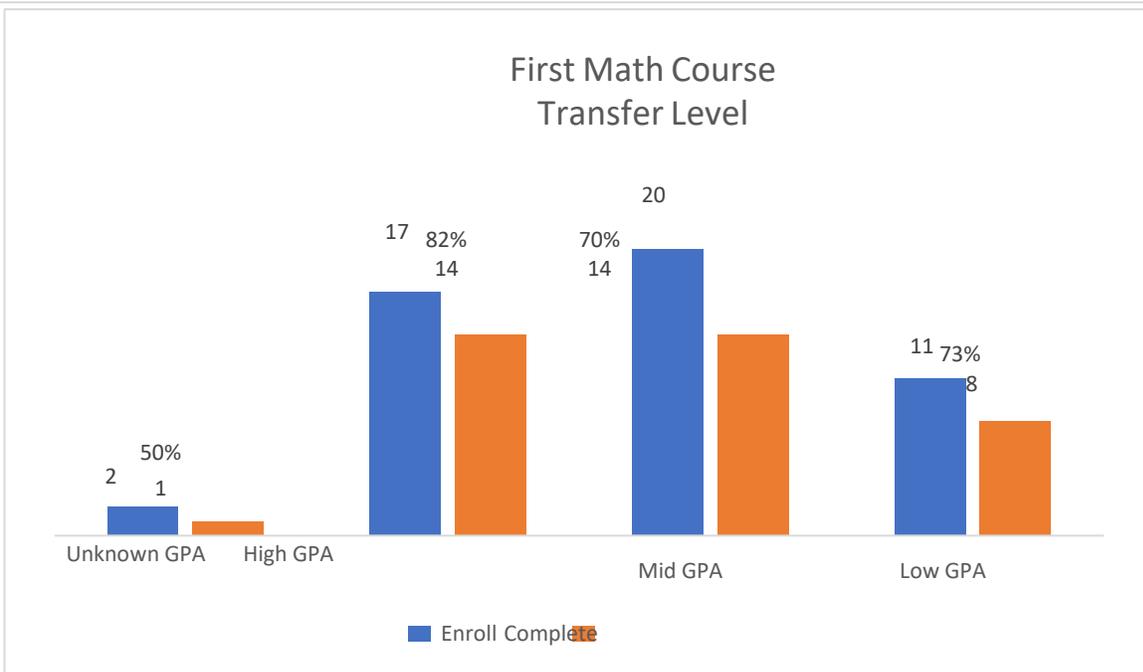
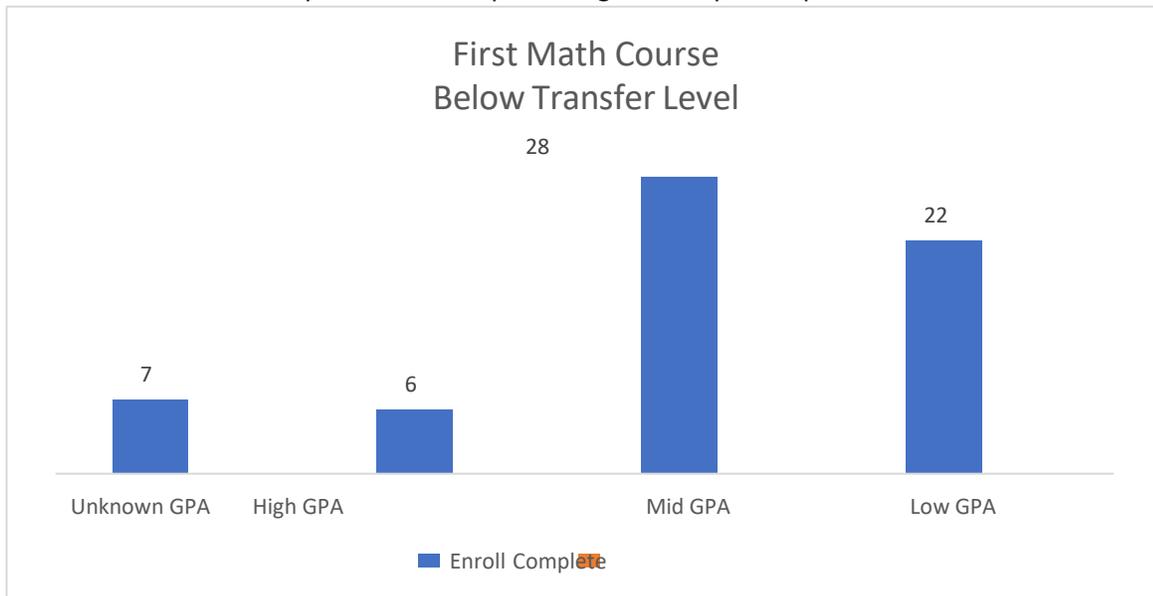
This document summarizes student throughput in one year at Allan Hancock College (AHC) for students enrolled in their first math course in the time frame of fall 2019 through fall 2020 inclusive. Throughput occurs when a student completes transfer level math within one year of their first math enrollment. Students are grouped by pathways of Business/STEM (B-STEM) and Statistics/Liberal Arts (SLAM) based on major intent in term of first math course.

#### I. BSTEM Outcomes

For this study BSTEM students include the following majors: Biology, Business Administration, Chemistry, Computer Science, Engineering (Civil/Tech), Math, Physics, Ag Business/Plant Science, Enology/Viticulture, Kinesiology, Nutrition & Dietetics, Psychology for transfer UC.

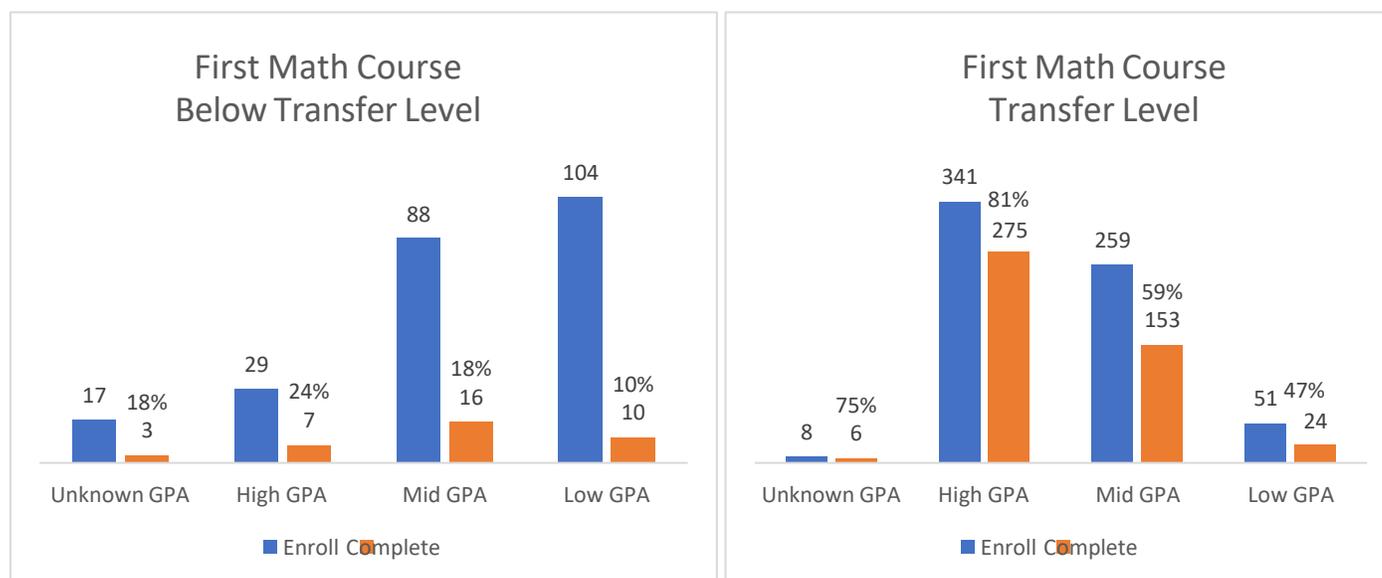
- 1,010 students in the timeframe had a BSTEM major. Eleven percent had degree/certificate as an educational goal, and 89% had transfer/unknown as an educational goal. Seventy percent had a first math enrollment in a transfer level course, and 30% had a first math enrollment in a course below transfer level.
- The students with the lowest HS GPA who had a first math enrollment in transfer math had successful throughput than any student (regardless of HS GPA) who had a first math enrollment below transfer level.

Chart I. BSTEM Comparison of students with Degree/Certificate Ed Goal by HS GPA band. Count of enrollments and completers and the percentage of completers per HS GPA band.



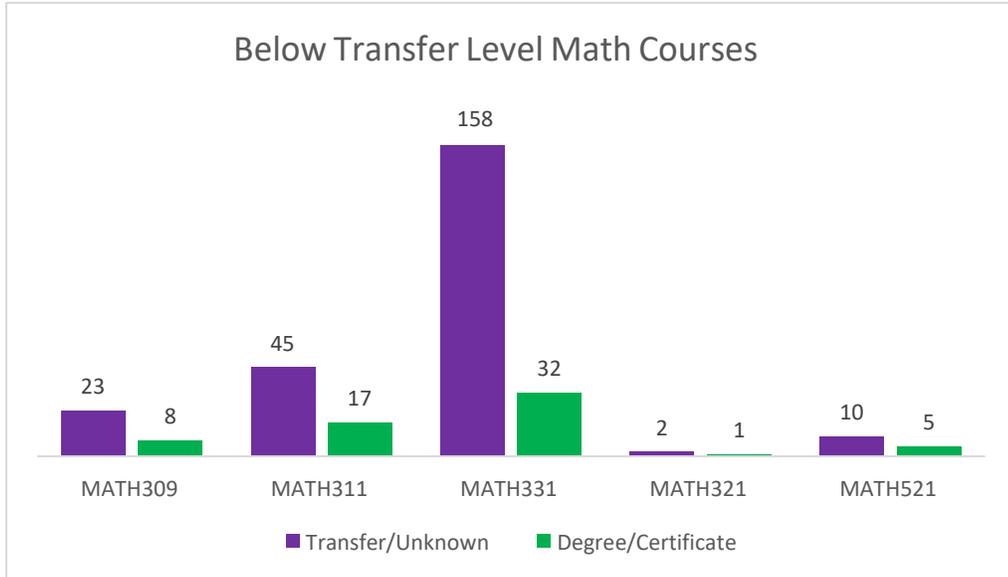
- Chart I shows the enrollment and completion throughput rates of students in BSTEM who start at least one level below (left) compared to those who start at transfer (right). No students with a degree/certificate goal completed transfer level math in one year when their first math course was below transfer level compared to 74% of all students who had a first math enrollment in a transfer level course.

Chart II. BSTEM Comparison of students with Transfer/Unknown Ed Goal by HS GPA band. Count of enrollments and completers and the percentage of completers per HS GPA band.



- Chart II shows that across all GPA bands, students with a first enrollment in transfer level math (right) had a successful one-year throughput higher than all groups of students who started below transfer. In fact, students in the lowest GPA band had a throughput rate of 47%, almost five times higher than the successful throughput of the same HS GPA band for students with a first enrollment below transfer level math (left).

Chart III. Course distribution of all BSTEM students who enrolled in a first math course below transfer level by education goal. Count of enrollments per math course.



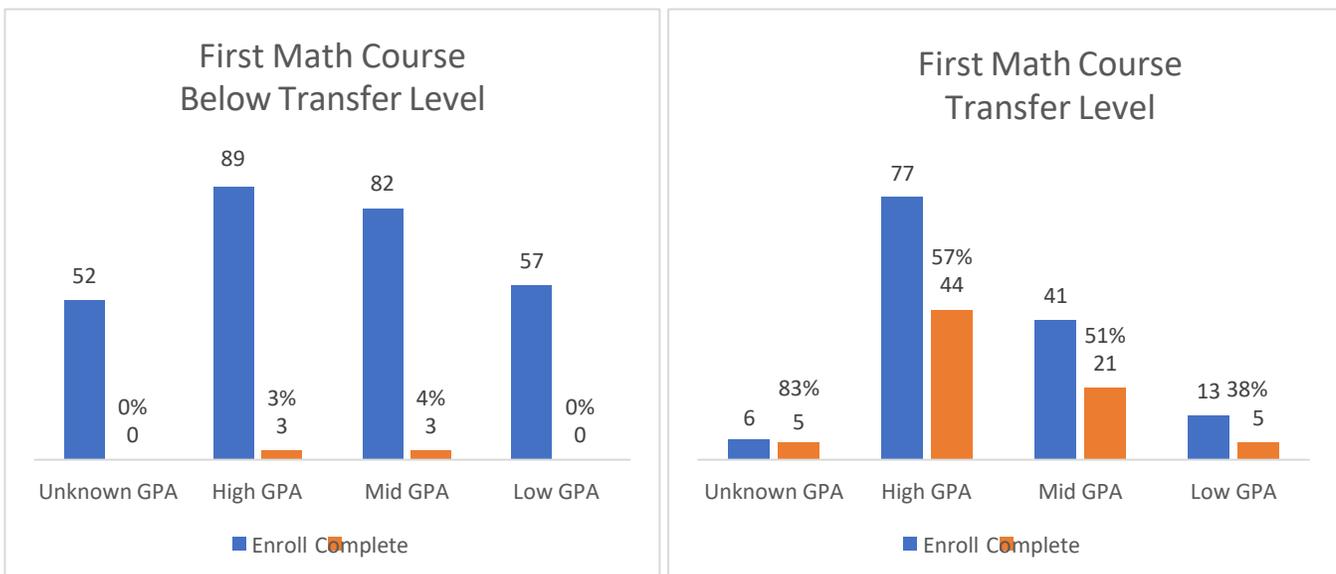
- About 25% of the below transfer math enrollments for BSTEM students were two or more levels below transfer (MATH 521 & MATH 311).

II. SLAM Outcomes

SLAM majors: any major not listed on the previous page as being a BSTEM major is considered a SLAM major. Most Majors at AHC fall into this category.

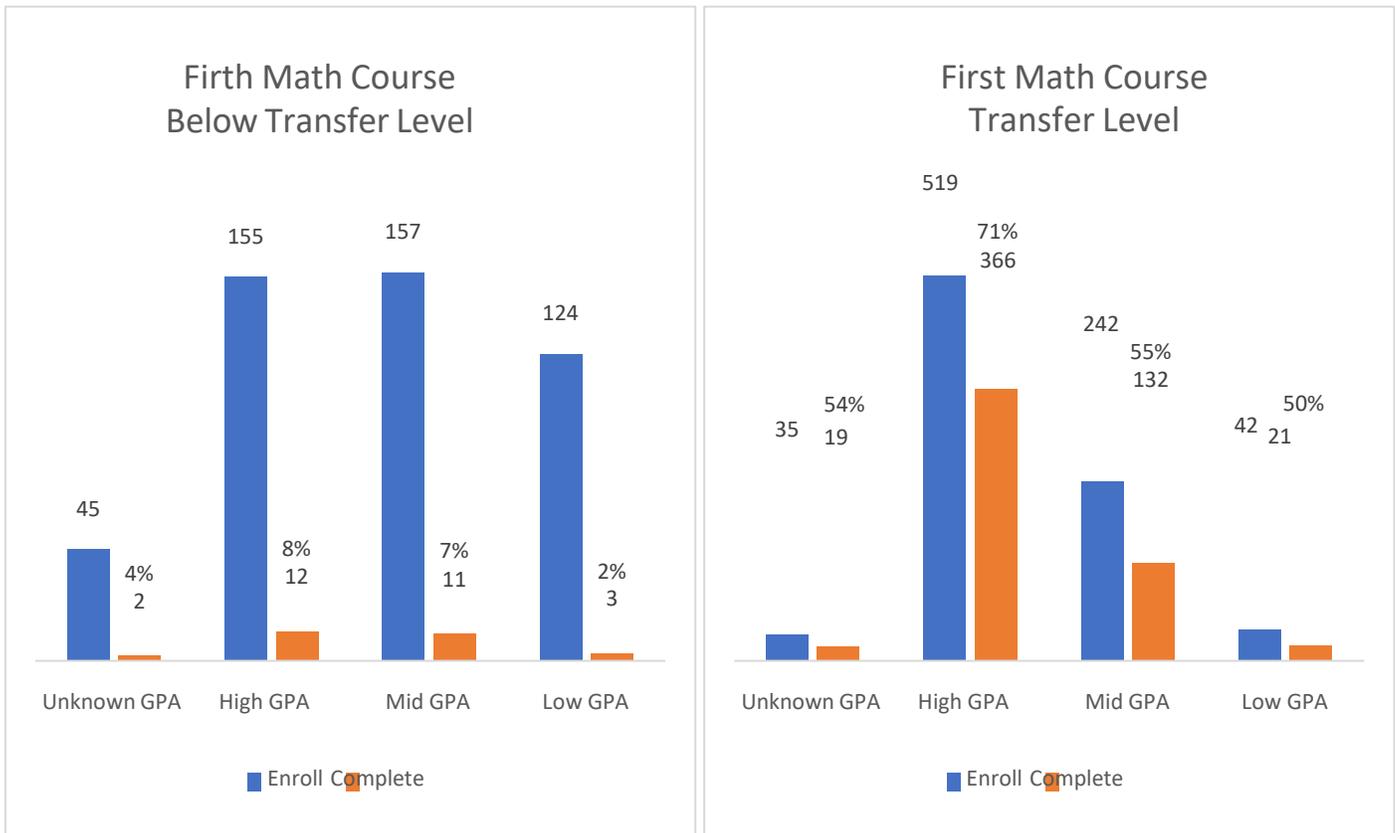
- 1,742 students in the timeframe had a SLAM major. Twenty-four percent had degree/certificate as an educational goal, and 76% had transfer/unknown as an educational goal. Fifty-six percent had a first math enrollment in a transfer level course, and 44% had a first math enrollment in a course below transfer level.
- The students with the lowest HS GPA who had a first math enrollment in transfer math had successful throughput in one year at a higher rate than any student who had a first math enrollment below transfer level.

Chart IV. SLAM Comparison of students with Degree/Certificate Ed Goal by HS GPA bands. Count of enrollments and completers and the percentage of completers per HS GPA band.



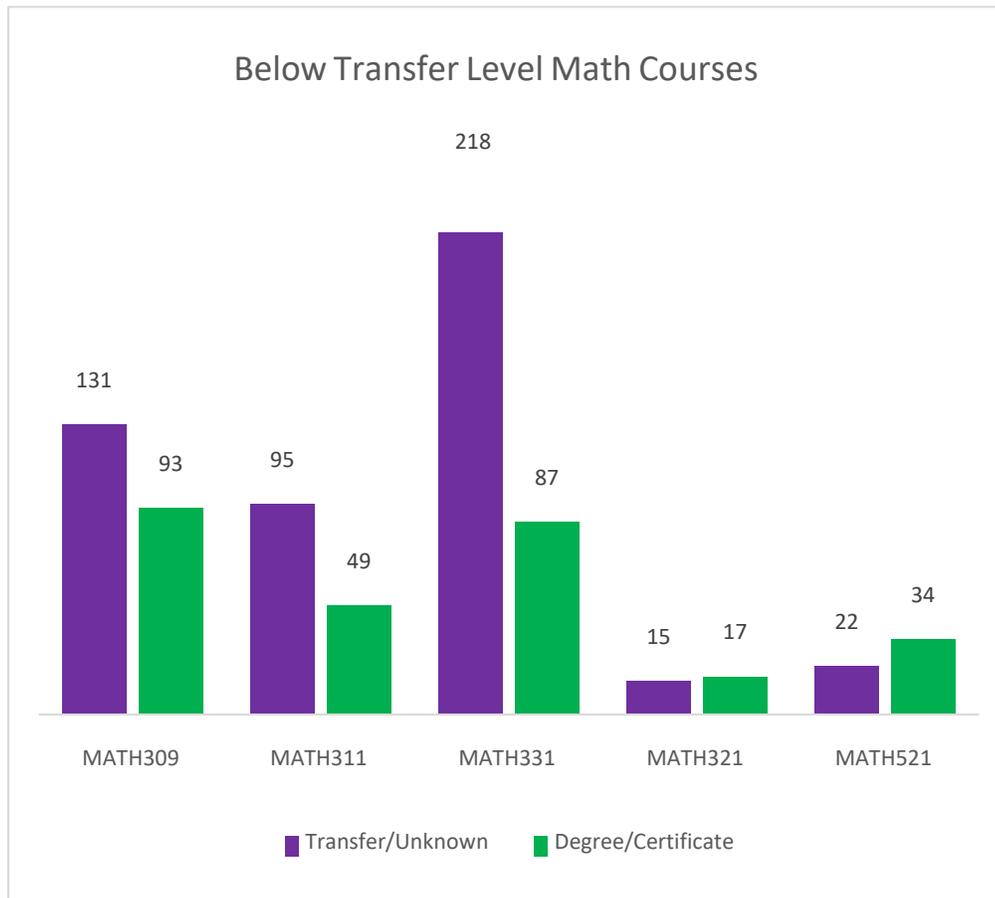
- Only 2% of the students with a degree/certificate goal completed transfer level math in one year if their first math course was below transfer level (left). Combining BSTEM from above with SLAM students only 6/349 students in this group had successful throughput.
- Over half of the student with a degree/certificate goal who started in a transfer level math course (right) had successful throughput in one year (77/137). The highest HS GPA band was slightly above 50% and the lowest HS GPA band was slightly below 50%.

Chart V. SLAM Comparison of students with Transfer/Unknown Ed Goal by HS GPA bands. Count of enrollments and completers and the percentage of completers per HS GPA band.



- Across all HS GPA bands, students have much higher throughput when their first math course is transfer level. At the lowest GPA band, throughput is only 2% when students begin below transfer compared to 50% when students start at transfer level. Among the students with a transfer/unknown goal, they are 20 times more likely to have successful throughput compared to the same students with a first math enrollment below transfer level.
- Almost 50% of SLAM students eligible for transfer level math either chose or were advised into a math class below transfer.

Chart VI. Course distribution of SLAM students who enrolled in a first math course below transfer level by education goal. Count of enrollments per math course.



- About 26% of the below transfer math enrollments for SLAM students were two or more levels below transfer (MATH 521 & MATH 311).

Table 1. Students with a Degree or Certificate Goal

Degree Goal	Students Enrolled in College-Level or Below			Students Enrolled Directly in Transfer Level with or without a Corequisite			Throughput Rates	
	1. Total Enrolled	2. Subtotal who Completed College-Level or Higher within One Year	3. Throughput Rate	4. Total Enrolled	5. Subtotal who Completed College-Level or Higher within One Year	6. Throughput Rate	7. Throughput Rate Differences	8. Maximize Throughput?
Overall	63	0	0.0%	50	37	74.0%	-74.0%	No
GPA Unknown	7	0	0.0%	2	1	50.0%	-50.0%	No
Highest GPA Band*	6	0	0.0%	17	14	82.4%	-82.4%	No
Middle GPA Band**	28	0	0.0%	20	14	70.0%	-70.0%	No
Lowest GPA Band***	22	0	0.0%	11	8	72.7%	-72.7%	No

B-STEM GPA Bands:

\*Highest: HSGPA  $\geq 3.4$  OR HSGPA  $\geq 2.6$  AND enrolled in a HS Calculus course

\*\*Middle: HSGPA  $\geq 2.6$  or Enrolled in HS Precalculus

\*\*\*Lowest: HSGPA  $\leq 2.6$  and no Precalculus

Table 2. Students with a Transfer Goal including Unknown and Undecided

Transfer, Unknown, Undecided Goal	Students Enrolled in College-Level or Below			Students Enrolled Directly in Transfer Level with or without a Corequisite			Throughput Rates	
	1. Total Enrolled	2. Subtotal who Completed Transfer-Level within One Year	3. Throughput Rate	4. Total Enrolled	5. Subtotal who Completed Transfer Level within One Year	6. Throughput Rate	7. Throughput Rate Differences	8. Maximize Throughput?
Overall	238	36	15.1%	659	458	69.5%	-54.4%	No
GPA Unknown	17	3	17.6%	8	6	75.0%	-57.4%	No
Highest GPA Band*	29	7	24.1%	341	275	80.6%	-56.5%	No
Middle GPA Band**	88	16	18.2%	259	153	59.1%	-40.9%	No
Lowest GPA Band***	104	10	9.6%	51	24	47.1%	-37.4%	No

including HS GPA bands

## Appendix B: Majors of BSTEM students who enrolled in below transfer level math

StudentPath	MAJOR_DESC (Ed Goal at Term)	Cohort	Pass
Grand Total	Total	301	36
BSTEM	Ag Business for Transfer CSU	1	0
BSTEM	Ag Business for Transfer UC	1	0
BSTEM	Ag Plant Science for Trnsfr UC	1	0
BSTEM	AgPlant Science for Trnsfr CSU	1	0
BSTEM	Biology	27	2
BSTEM	Biology for Transfer CSU	23	2
BSTEM	Biology for Transfer UC	4	2
BSTEM	Business Admin for Trnsfr CSU	31	4
BSTEM	Business Admin for Trnsfr UC	8	1
BSTEM	Business Administration	16	0
BSTEM	Chemistry	1	0
BSTEM	Chemistry for Transfer CSU	3	0
BSTEM	Civil Engineering	3	1
BSTEM	Computer Science	27	2
BSTEM	Computer Science for Trnsfr UC	4	1
BSTEM	ComputerScience for Trnsfr CSU	20	4
BSTEM	Engineering	31	4
BSTEM	Engineering Technology	8	1
BSTEM	Engr Tech: Mechatronics	4	0
BSTEM	Enology/Viticulture	5	0
BSTEM	Kinesiology	6	0
BSTEM	Kinesiology for Transfer CSU	5	0
BSTEM	Kinesiology for Transfer UC	1	0
BSTEM	Mathematics and Science	17	2
BSTEM	Mathematics and Science CSU	28	6
BSTEM	Mathematics and Science UC	5	0
BSTEM	Mathematics for Transfer CSU	3	1
BSTEM	Nutrition and Dietetics for Tr	2	0
BSTEM	Nutritn&Dtetics for Trnfer CSU	5	2
BSTEM	Physics for Transfer CSU	3	1
BSTEM	Psychology for Transfer UC	7	0

## Appendix C: Data tables underlying graphs for SLAM students including HS GPA bands.

Table 1. Students with a Degree or Certificate Goal								
	Students Enrolled in College-Level or Below			Students Enrolled Directly in Transfer Level with or without a Corequisite			Throughput Rates	
Degree Goal	1. Total Enrolled	2. Subtotal who Completed College-Level or Higher within One Year	3. Throughput Rate	4. Total Enrolled	5. Subtotal who Completed College-Level or Higher within One Year	6. Throughput Rate	7. Throughput Rate Differences	8. Maximize Throughput?
<b>Overall</b>	<b>286</b>	<b>6</b>	<b>2.1%</b>	<b>137</b>	<b>75</b>	<b>54.7%</b>	<b>-52.6%</b>	No
GPA Unknown	52	0	0.0%	6	5	83.3%	-83.3%	No
Highest GPA Band*	89	3	3.4%	77	44	57.1%	-53.8%	No
Middle GPA Band**	82	3	3.7%	41	21	51.2%	-47.6%	No
Lowest GPA Band***	57	0	0.0%	13	5	38.5%	-38.5%	No
SLAM GPA Bands:								
*Highest: HSGPA $\geq 3.0$								
**Middle: HSGPA $\geq 2.3$								
***Lowest: HSGPA $< 2.3$								
Table 2. Students with a Transfer Goal including Unknown and Undecided								
	Students Enrolled in College-Level or Below			Students Enrolled Directly in Transfer Level with or without a Corequisite			Throughput Rates	
Transfer, Unknown, Undecided Goal	1. Total Enrolled	2. Subtotal who Completed Transfer-Level within One Year	3. Throughput Rate	4. Total Enrolled	5. Subtotal who Completed Transfer Level within One Year	6. Throughput Rate	7. Throughput Rate Differences	8. Maximize Throughput?
<b>Overall</b>	<b>481</b>	<b>28</b>	<b>5.8%</b>	<b>838</b>	<b>538</b>	<b>64.2%</b>	<b>-58.4%</b>	No
GPA Unknown	45	2	4.4%	35	19	54.3%	-49.8%	No
Highest GPA Band*	155	12	7.7%	519	366	70.5%	-62.8%	No
Middle GPA Band**	157	11	7.0%	242	132	54.5%	-47.5%	No
Lowest GPA Band***	124	3	2.4%	42	21	50.0%	-47.6%	No

## Appendix D: Majors of SLAM students who enrolled in below transfer level math

StudentPath	MAJOR_DESC (Ed Goal at Term)	Cohort	Pass
Grand Total	Total	761	34
SLAM	Accounting	14	1
SLAM	Addiction Studies	5	0
SLAM	Admin Assistant/Secretarial	5	0
SLAM	Admin Justice for Trnsfr CSU	34	2
SLAM	Admin Justice for Trnsfr UC	1	0
SLAM	Administration Of Justice	45	0
SLAM	Administrative Office Skills	2	0
SLAM	Agribusiness: Wine Business	2	1
SLAM	Agricultural Science	18	2
SLAM	Animation	3	0
SLAM	Anthropology for Transfer CSU	1	0
SLAM	Architectural Drafting	9	1
SLAM	Art	14	0
SLAM	Arts and Humanities	6	0
SLAM	Arts and Humanities CSU	8	2
SLAM	Arts and Humanities UC	1	0
SLAM	Auto Body Refinishing	1	0
SLAM	Auto Body Technology	10	1
SLAM	Auto Service Management	5	1
SLAM	Auto Tune-up and Diagnostics	6	0
SLAM	Automotive Chassis	9	0
SLAM	Certified Nursing Assistant	3	0
SLAM	Co-Occurring Disorders	1	0
SLAM	Comm Studies for Transfer CSU	5	1
SLAM	Community Ed Non Credit	2	0
SLAM	Computer Business Info Systems	6	0
SLAM	Cosmetology	10	0
SLAM	Culinary Arts and Management	1	0
SLAM	Culinology	13	0
SLAM	Dance	2	0
SLAM	Database Administration	1	0
SLAM	Dental Assisting	22	0
SLAM	Early Chldhd Studies General	14	1
SLAM	EarlyChildhoodEd for Trnsfr CSU	3	0
SLAM	Elec Tech: Mechatronics	2	0
SLAM	Electronic Engineering Tech	6	1
SLAM	Electronic Technology	4	0
SLAM	Elem Teacher Ed for Trnsfr CSU	12	2
SLAM	Elem Teacher Ed for Trnsfr UC	1	0
SLAM	Elementary Education	4	0
SLAM	Emerg Medical Tech 1 (Basic)	1	0
SLAM	Emergency Medical Services	13	0
SLAM	Engine Rebuilding	16	0

SLAM	English	2	0
SLAM	English for Transfer CSU	2	0
SLAM	English for Transfer UC	1	0
SLAM	Entrepreneurship	6	0
SLAM	Environmental Health & Safety	1	0
SLAM	Fam and Consumer Scien General	1	0
SLAM	Film And Video Production	10	0
SLAM	Fire Technology	31	4
SLAM	Graphics	4	0
SLAM	History for Transfer CSU	5	0
SLAM	Human Services General	8	0
SLAM	Information Architecture	1	1
SLAM	Interior Design Merchandising	4	0
SLAM	Lib Studies Elem Teacher Prep	3	0
SLAM	Licensed Vocational Nursing	15	2
SLAM	Machining & Manufacturing Tech	1	0
SLAM	Management	20	1
SLAM	Marketing	19	0
SLAM	Media Arts: Animation	1	0
SLAM	Medical Assisting	1	0
SLAM	Multimedia Art & Communication	4	0
SLAM	Music	8	0
SLAM	Noncredit Community Ed	1	0
SLAM	NR	32	1
SLAM	Operations	4	1
SLAM	Paralegal Studies	4	0
SLAM	Photography	7	0
SLAM	PoliticalScience for Trnsfr UC	1	0
SLAM	PoliticalScience for TrnsfrCSU	1	0
SLAM	Preschool Infant/Toddler	3	0
SLAM	Psychology	24	1
SLAM	Psychology for Transfer CSU	11	1
SLAM	Recreation Management	7	0
SLAM	Registered Nursing	99	4
SLAM	Restaurant Management	1	0
SLAM	Social and Behavioral Sciences	11	0
SLAM	Social Sciences	5	0
SLAM	Social&Behavioral Science CSU	3	1
SLAM	Sociology for Transfer CSU	8	1
SLAM	Spanish	1	0
SLAM	Spanish for Transfer CSU	2	0
SLAM	Spanish for Transfer UC	1	0
SLAM	Special Education	4	0

SLAM	Speech Communication	1	0
SLAM	Sports Medicine	9	0
SLAM	Studio Arts for Transfer CSU	3	0
SLAM	Theatre Arts for Transfer CSU	2	0
SLAM	Theatre: Design/Tech Theatre	2	0
SLAM	Theatre: Professional Acting	1	0
SLAM	Viticulture	4	0
SLAM	Welding Technology	20	0

### Data for Program with Vocational TOP Codes (CTE):

[https://misweb.cccco.edu/perkinsv/Core\\_Indicator\\_Reports/Default.aspx](https://misweb.cccco.edu/perkinsv/Core_Indicator_Reports/Default.aspx)

[Please review the data and comment on any trends.](#)

#### c. Current industry employment and wage data (please cite sources) Suggested sources:

[ONet Online](#) and [EDD LMI site](#)

N/A

#### d. Industry employment and wage trends

N/A

#### e. TOP code employment CORE indicator report

N/A

#### f. Advisory committee recommendations

N/A

## V. Continuous Improvement of the Program

### a. Status of Final Plan of Action – Post Validation

Summarize the progress made on the recommendations from your last comprehensive program review plan of action

PLAN OF ACTION	ACTION TAKEN/RESULT AND STATUS
1. Mathematics Department has the departmental retreat every semester to discuss SLO data, decide on any changes and plan for future assessments.	<b>Completed and On-going.</b> Mathematics Department had the departmental retreats on 8/12/2022 for fall 2021 and on 1/20/2022 for spring 2022 to discuss SLO data.
2. Continue to promote high academic standards for mathematics students in achieving success with Student Learning Outcomes while making efforts to make mathematics accessible to as many students as possible.	<b>Completed and On-going.</b>
3. Utilize the Math Center to increase accessibility to resources and tutoring to support students. Continue to support the MESA and STEM programs and inform students of their support services.	<b>Completed and On-going.</b> Math Center loaned 350 graphing calculators to students in Spring 2022. Math Center continues to offer both remote (online) and on-campus tutoring services to support students.
4. Continue to remain current in both mathematics and technology.	<b>Completed and On-going.</b> All of our mathematics courses have been mapped and approved onto the C-ID numbering system. Textbooks used are current and reflect state of the instruction and tools for student success.
5. Hire new full-time math instructors.	<b>Completed and On-going.</b> Mathematics Program is notified that we will hire 2 full-time math instructors for Fall 2022. However, we still need to hire one more full-time math instructor to have 16 full-time faculty members in our department.
6. Recruit and hire new part-time math instructors and increase the size of the qualified math instructor pool.	<b>Completed and On-going.</b> We recruited and hired part-time math instructors in Fall 2021.
7. Increase the number of class sections as demand necessitates.	<b>Completed and On-going.</b> The number of Calculus courses (Math 181 and Math 182) and Statistics courses (Math 123) has increased.

8. Continue to consider accommodations for students who cannot attend day time classes. Offer evening classes, summer classes, and online classes.	<b>Completed and On-going.</b> Mathematics Program continues to offer evening classes, summer classes, and online classes to accommodate students who cannot attend day time classes.
9. Maintain class offerings at both the Santa Maria campus and the Lompoc Valley Center.	<b>Completed and On-going.</b> Mathematics Program continues to offer classes at both the Santa Maria campus and the Lompoc Valley Center.
10. Continue to evaluate and update curriculum, maintaining course currency through AP&P.	<b>Completed and On-going.</b> All of our mathematics courses have been mapped and approved onto the D-ID numbering system.
11. Continue monitoring articulation feedback from universities.	<b>On-going.</b>
12. Continue to volunteer for Friday Night Science and Bow -Wow. Continue to participate in college outreach efforts.	<b>Completed and On-going.</b> Math Center participated in Bow-Wow event in Spring 2022. Mathematics Program plans to participate in Career Exploration Day on April 1, 2022.
13. Replace the M-400 building as soon as possible. As an intermediate solution, serious updates should be undertaken in the areas of HVAC, lighting, and sound control.	<b>On-going.</b> This still has not been accomplished.
14. The Math Center needs a larger space due to the fact that it cannot accommodate all the students during the peak hours. Math Center needs to be relocated to a larger facility, such as the replacement for M-400, as campus construction allows.	<b>On-going.</b> This still has not been accomplished.
15. Add a second computerized classroom/lab.	<b>On-going.</b> This still has not been accomplished.
16. Update all computerized equipment in M-201 as needed.	<b>On-going.</b> Before Spring 2022 semester started, M-201 is equipped to teach Hybrid courses (Room and Zoom).
17. Purchase computers and other needed equipment for a second computerized classroom.	<b>On-going.</b> This still has not been accomplished. The second computerized classroom is not available yet. However, new technologies were installed in classrooms M-201, M-311, M-312, M-43-, M-431, M-438, W-23, W-26, and H-105 to offer Hybrid (Room and Zoom) courses.

18. We are still down 2 full-time faculty members (from 16) and have one retirement expected at the end of the 2020/2021 academic year. Hire at least 3 full-time faculty members to reach 16 full-time faculty members.	<b>Completed and On-going.</b> Mathematics Program will hire 2 full-time faculty members for Fall 2022. However, we need to hire one more full-time faculty member to reach 16 full time faculty members.
19. Hire an Instructional Assistant for the Math Center (this position is currently on the Staff Prioritization List).	<b>On-going.</b> This still has not been accomplished.
20. Plan for potential retirements of full-time mathematics faculty prior to the next program review in 2026.	<b>On-going.</b> There is no plan for potential retirements of full-time mathematics faculty at this moment (Year 2021-2022).
21. Expand the Math Center hours of operation during the weekends (Saturdays and Sundays).	<b>On-going.</b> This still has not been accomplished.
22. Hire additional student tutors (especially tutors for Statistics and Calculus courses) for the Math Center.	<b>Completed and On-going.</b> Math Center continuously needs to hire tutors for Statistics and Calculus courses to replace student tutors who are transferring next semester.
23. Establish department budget for 500 ClassCalc Licenses per semester. (\$4000/semester)	<b>On-going.</b> We may need to check that amount versus expected usage and current license costs.

**b. List any new resources that the program received in the past year and the results**

Source	Specific Resource	Est. Amount \$	Impact on program or course outcomes
District	Budget Augmentation; Student Tutors	\$69,000	More student workers were funded by district to help student in Math Center, both in-person and on campus.

c. List any new or modified recommendations below, including rationale for these in the table.

Program Improvement Plan (Program, Priority Number, year)	Anticipated Outcome (Goal)	Program Goal Status (Indicate if this goal is ongoing from a previous Annual Or Comprehensive Program Review or new this year).	Alignment to Strategic Directions and planning goals (see "Alignment to Strategic Directions" Attached	Activities	Justification (Evidence of need)	Resource Request (From table Below)	Anticipated Completion Date or On-going
	<p>Fully comply with the State Law of AB 705.</p> <p>Research the implications of AB 705.</p> <p>Develop curriculums as needed.</p>	NEW	SLS 1	Planning Meetings Workshops	Mathematics Program is notified that by fall 2022 the California Community College system must transition to full implementation of AB705.		FALL 2022  (On-going if Needed)
	Retrain part-time instructors when courses get dropped or moved to Community Education as a result of AB 705.	On-going	SLS 1	Training Sessions  Workshops	Mathematics Department heavily rely on part-timers who teach development class repeatedly. When their classes get dropped, we will have higher level courses that need to be staffed.		FALL 2022  (On-going if Needed)
	Establish a set of "Pre-Test" for each course that can be given to students the first day of class so they know what skills they are expected to bring to the class.	NEW	SLS 2	Exam Writing Sessions	We expect to have more under-prepared students in coming Fall 2022 classes due to AB 705. The "Pre-Test" will give the students a fair warning of what students are expected to know when entering 100s level courses.		FALL 2022  (On-going if Needed)

d. Summary of request for resources. Please list the type of request (facility, technology, staffing, equipment, other) and rank their priority.

Resource Requests (Program , RRR year)	Item	Program Goal	Type	One-time cost	On-going cost (per fiscal year)	Anticipated Completion Date or On-going
1	500 ClassCalc Licenses per semester	SLS6	Equipment	\$4000/semester	\$8000/Year	FALL 2022/ Ongoing
2.	Replace the M-400 building as soon as possible.  (As an intermediate solution, serious updates should be undertaken in the areas of HVAC, lighting, and sound control as students are frequently distracted by the climate and sound issues)	IR4	Facility	TBD	TBD	FALL 2022
3.	Relocate Math Center to a larger facility	IR4	Facility	TBD	TBD	FALL 2022
4.	Add a second computerized classroom/lab.	IR2/IR4	Facility	TBD	TBD	FALL 2022
5.	Hire one more Full-Time Faculty member to reach 16 full-time faculty members	IR1/IR2	Staffing	TBD	\$58-82k +benefits	FALL 2023
6.	Hire an Instructional Assistant for the Math Center (RANGE 20A)	IR1/IR2	Staffing	TBD	Full-time \$34,710+benefits  Part-time \$17,305+benefits	FALL 2022
7.	Recruit and hire new part-time math instructors as needed	IR1	Staffing	TBD	TBD	On-going

8.	Update all computerized equipment in M-201 as needed	SLS6	Equipment	TBD	TBD	On-going
9.	Purchase computers and other needed equipment for a second computerized classroom	IR2	Equipment	TBD	TBD	On-going
10.	Training faculty members to address AB 705	SLS1/SLS2/ SLS3	Other	TBD	TBD	FALL 2022/ On-going
11.	Workshop to research implications of AB 705 and to develop curriculums as needed	SLS1/SLS2/ SLS3	Other	TBD	TBD	FALL 2022/ On-going
12.	Training part-time faculty members to fully comply with the State Law of AB 705	SLS1/SLS2/ SLS3	Other	TBD	TBD	FALL2022/ On-going