ALLAN HANCOCK COLLEGE

PROGRAM REVIEW

2020-2021

Program Name: Mathematics

Self Study Team: Eui Chung

Scott King

Jeffrey Appel

PROGRAM REVIEW

Mathematics

TABLE OF CONTENTS

PROGRAM REVIEW

Status Summary-Final Plan of Action

Program Review Self Study

Student Data Summary

Survey used for Student Data Collection

Assessment Plan

Review of Prerequisites, Corequisites, and Advisories

Plan of Action- Pre-Validation

STATUS SUMMARY

FINAL PLAN OF ACTION

PROGRAM REVIEW

Status Summary - Plan of Action-Post Validation

During the academic year, 2014/2015, Mathematics completed program review. The self-study and validation teams developed a final plan of action-post validation based on information in the self study and the recommendations of the validation team. For each plan, indicate the action taken, the result of that action, and the current status of the plan, if it is incomplete.

(If any plan was made and action not taken, please state the rationale for not pursuing that particular item.)

PLAN OF ACTION	**ACTION TAKEN, RESULT AND STATUS**
1. Have an annual departmental retreat to discuss and enter that year's SLO data.	Completed and Ongoing. The Mathematics Department meets twice a year annually (6 hours in fall semester and 6 hours in spring semester).
2. Compare success rates in Traditional classes versus alternative modes of instruction, such as computer aided instruction or online classes.	Ongoing. We will continue to compare success rates for traditional versus online modality.
3. Compare success rates for Math 100 and Math 123 students who take Math 309 as the prerequisite versus those who take Math 331.	Ongoing. We will continue to compare success rates for the identified groups. We need updated results from IRP.
4. Monitor success rates for students who use the new multiple measures placement process to override their placement just based on test score alone.	Ongoing. The implementation of Multiple Measures in Fall 2017 resulted in a shift in enrollment (not on increase or decrease). There was greater demand for both calculus and statistics courses. The total waitlist for Calculus 1 in Fall 2017 was at least 50, which was partially satisfied by moving some calculus sections into larger classrooms. This cannot always be done. Multiple Measures Placement had caused a shift in the distribution of course offerings. To monitor success rates for students who use the new multiple measures placement process, we need updated results from IRP.

5. Expand Math Center hours, space and staffing, hire more math instructors, add math classrooms.	Completed and ongoing. We have expanded Math Center hours to include the following days and times: Monday-Thursday 9 a.m.- 8 p.m. Friday 9 a.m.- 2 p.m. Saturday 11 a.m.-4 p.m. Sunday 12 p.m.- 4 p.m. We still need a larger space for the Math Center, more staffing, as well as hire additional math instructors.
6. Identify alternatives to onsite tutoring in the Math Center (such as online, referring Calculus students to the STEM Center, referring students to the ARC).	Completed and ongoing. The Mathematics students continue to be provided with additional tutoring resources.
7. Update articulation agreements (or explore concurrent enrollment).	Ongoing. The Concurrent Enrollment has posed various challenges in past years. After analyzing the concurrent enrollment, courses offered over the last several years, we have decided to put a hold on offering concurrent enrollment courses.
8. Offer online versions of Math 141 and 181.	Completed. The Mathematics Department has offered Math 141 and Math 181 online courses since Fall 2015.
9. Based on analysis of SLO’s from Math 181 and 182, we realize students coming into the Calculus sequence need a stronger Trig background. So we will add one unit to Math 141 (Precalculus) to add more Trig. This will also bring our course in line with the C-ID descriptor for Precalculus.	Completed. The Mathematics Department added one more unit to the Math 141 Precalculus course. It is now a 6 unit course and it covers more trigonometric material to better prepare the students for the calculus sequence. The course is in line with the C-ID descriptor for Precalculus.
10. Successfully offer the new course Math 309.	Completed. The Mathematics Department has offered Math 309 since Spring 2016.
11. Make 309 an option for the AHC Math Graduation Requirement.	Completed. Math 309 is currently an option for the AHC Math Graduation Requirement.

12. Locate at least one more classroom for Math program use.	Ongoing. This still has not been accomplished. In Spring 2018, one instructor taught a class in C-40. In Fall 2018, a math class was scheduled in a Health Sciences classroom, and another in K-20, both new rooms for math courses.
13. The Math Center is too small. Expand or move to a bigger room.	Ongoing. The Math Center needs a larger space due to the fact that it cannot accommodate all the students during the peak hours. We need to expand or move to a larger room. The Math Center should be relocated to a larger facility, such as the replacement for M-400.
14. Renovate the M400 block of classrooms.	Ongoing. The M-400 building is slated to be a priority project in the current draft of the new facilities master plan. We need to replace the M-400 building as soon as possible. The department will continue to seek improvement of the M-400 facilities. As an intermediate solution, serious updates should be undertaken in the areas of HVAC, lighting, and sound control.
15. Add a second computerized classroom/lab.	Ongoing. The mathematics department has been in need of a second computerized classroom. The initial request was made in 2008. This will allow us to offer classes that require computers without affecting the current computer lab space (M-201). We have requested the Health Science computer lab to use at times, but they have been hesitant in letting us use it as they do not want their computer setups disturbed. We have used O-112 at times, but that is always limited. We have the lap-tops in M-438 (Math 309 room), but the cart is difficult to move elsewhere.

16. Purchase computers and other needed equipment for a second computerized classroom.	Ongoing. We need computers and updated technology in a second computer lab for classes and open-access for math and STEM students. As the redesign of the developmental math program continues it may become necessary to obtain a second computer lab.
17. If not already present, purchase a smart podium with projector and all other needed equipment when a new math classroom is located.	Ongoing. We need appropriate technology for effective pedagogy. We have a smart podium in classrooms in M-312, K-26, W-23, W-26, and M-212. Currently there is insufficient technology in classrooms M-430, M-431, M-438, and M-439. Updated technology should be installed in these classrooms to meet technological needs for the department. All the classrooms need technology upgrades of one form or another. 1. No classes have large monitors for student viewing. Currently, we have inadequate projectors for classroom presentations. These projectors are often pointed at the middle of the white board, making simultaneous use of the projector and writing on the white board difficult. 2. No classes have cameras permanently installed.
18. We are still down 3 full-time instructors and have two retirements expected in the 2015/16 academic year. Hire at least 3 full-time instructors, plus replace any future retirees.	Ongoing. The Mathematics Department hired the three new instructors in Spring 2016, however we have since had two retirements and those positions have not been replaced. We are at 14 full-time faculty, down from 16 full-time faculty in Fall 2008.
19. Institutionalize district funding ($3000) to hire Math Center student tutors for summer.	Ongoing. We need to utilize the Math Center to increase accessibility to resources and tutoring to support students

	during summer term. We need to hire additional student tutors (especially tutors for Statistics and Calculus courses) for the summer term.
20. Increase district funding (at least $20,000 per year; ideally $30,000) to hire additional student tutors for the Math Center in Fall and Spring.	Ongoing. Seek a permanent augmentation to the Math Center budget for more funding for tutors and facilitators. Every year we submit a budget augmentation; however, due to the budget situation our request has not been fully granted. We will continue to pursue until our needs are met.
21. Hire an Instructional Assistant for the Math Center	Ongoing. This still has not been accomplished.
22. Expand the Math Center hours of operation until 8:00 pm M-TH.	Completed. We have expanded Math Center hours to include the following days and times: Monday-Thursday 9 a.m.- 8 p.m. Friday 9 a.m.- 2 p.m. Saturday 11 a.m.-4 p.m. Sunday 12 p.m.- 4 p.m.

PROGRAM REVIEW
SELF STUDY

Allan Hancock College Program Review

Program review is intended to be a reflective process that builds on the extensive qualitative and quantitative data gathered from not only program reviews and annual updates but also the office of Institutional Research and Planning. The process lays out the program's major directions for the future and is the foundation for institutional planning and resource allocation. (Place your responses in the expandable text boxes below each question.)

I. Program Mission *(must align with college mission statement)*

- For all programs, describe the need that is met by the program or the purpose of the program, and explain how it aligns with the college mission and strategic plan.

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:

• Lower division 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 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 (2014-2020); 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 (Goal SLS 3).

II. Progress Made Toward Past Program/Departmental Goals

Summarize the progress the discipline has made toward achieving its goals during the past six years. Discuss briefly the quality, effectiveness, strengths and struggles of the program and the impact on student success as reflected in past comprehensive program reviews and Annual Updates.

Past six years many of the goals identified in the Plan of Action – Post Validation have been achieved or are ongoing.

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

- The Mathematics faculty continue to work with Math Center and STEM and MESA Centers to offer tutorial services for our students.

- The Mathematics faculty adopts online education resources (OER) materials to limit and in some cases eliminate textbook costs for students.

The main goals that remain to be met are subject to the district budget :

- Hire full-time math faculties, replace any future retirees.
- Renovate the M400 block of classrooms.
- Provide a larger Math Center facility.
- Add a second computerized classroom/lab.
- Expand the Math Center hours of operation during the weekend.

III. Analysis of Resource Use and Program Implementation

Describe the program's current allocation and use of human, physical, technology, and fiscal resources. Are resources sufficient and appropriate to meet program needs? Can program resources be reallocated to better meet student needs? If so, how?

One full-time faculty member retired in May 2020. Also, another current full-time faculty member is scheduled to retire in May 2021. It will be imperative that at least two full-time faculty members in mathematics be hired to meet the program needs.

The M400 block of classrooms still does not have adequate climate control. These classrooms need proper HVAC systems installed.

The Math Center needs a larger space due to the fact that it cannot accommodate all the students during the peak hours. Students have suggested that the Math Center needs more individual study rooms. The Math Center is critical to student success and we need a larger space for the Math Center. The district needs to allocate more funding to the Math Center to expand the hours of operation on weekends (especially on Sundays). The Math Center needs to hire more student tutors (especially tutors for Statistics and Calculus courses).

Add a second computerized classroom/lab and purchase computers and other needed equipment. There is a trend in developmental math education towards using computers as the primary means of instruction in the classroom. The program has purchased laptops as a short term solution, but eventually will likely need a computerized classroom (other than M-201) dedicated just to math classes. Also, all computerized equipment in M-201 should be updated as needed.

IV. Program SLOs/Assessment

What are your program student learning outcomes? Have each of these been assessed since the last comprehensive program review? Describe changes you have made to courses or the program based on these data.

The Program SLOs are listed in Section 3 (Assessment Plan) of this document. Since our last Program Review, 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 are scheduled to assess the Program SLOs starting in Fall 2021. As a department, we have collaborated on assessment and have had many positive discussions on SLOs.

V. Distance Learning (If applicable):

Describe the distance education courses offered in your program and any particular successes or challenges with these courses. Include the enrollment as well as percentage of courses offered by modality and the rationale for this ratio.

- Compare the success and retention of your online offerings to the same courses offered face-to-face. Analyze any gaps and plans to address these.
- As well, describe how program instructors ensure regular substantive instructor-initiated contact in online classes.

The Mathematics Department currently offers the following distance learning courses: Math 311, Math 331, Math 123, Math 131, Math 141, and Math 181.

Math 521 online class was offered until spring 2018 semester. In addition, the Mathematics Department voted to approve the option of offering all other mathematics courses in a distance learning format.

Exhibit E2 provides a comparison of success and retention for face-to-face (FF) and distance learning (DL) both for Mathematics courses as well as AHC courses.
The comparison illustrates that overall success and retention in DL mathematics course in total compare favorable to FF mathematics courses.

In academic year 2015/2016, FF mathematics courses has a success rate of 75% compared to a success rate of 64% for DL courses. In that same academic year FF mathematics courses has retention rate of 90% compared to a retention rate of 83% for DL courses.

In academic year 2016/2017, FF mathematics courses has a success rate of 76% compared to a success rate of 66% for DL courses. In that same academic year FF mathematics courses has retention rate of 90% compared to a retention rate of 83% for DL courses same as previous academic year.

In academic year 2017/2018, FF mathematics courses has a success rate of 76% compared to a success rate of 67% for DL courses. In that same academic year FF mathematics courses has retention rate of 89% compared to a retention rate of 84% for DL courses.

In academic year 2018/2019, FF mathematics courses has a success rate of 75% compared to a success rate of 68% for DL courses. In that same academic year FF mathematics courses has retention rate of 89% compared to a retention rate of 85% for DL courses.

In academic year 2019/2020, FF mathematics courses has a success rate of 80% compared to a success rate of 73% for DL courses. In that same academic year FF mathematics courses has retention rate of 91% compared to a retention rate of 87% for DL courses. In this academic year, both FF and DL courses have significantly better success and retention rates. Due to Covid-19 (Pandemic) in spring 2020, all courses at AHC were converted to Remote ERT mode (Emergency Remote Teaching).

It is very important to note that at the College level regular semesters (fall and spring) reflect significant differences in success and retention percentages between FF and DL courses. Success rates for DL courses average 8.8% lower than FF courses (76.4% vs 67.6%). Retention rates for DL courses average 5.4% lower than FF courses (89.8% vs 84.4%).

All distance learning instructors are required to have proper training in the common practices in the distance learning modality. Also, instructors are required to communicate with their distance learning students through email, Canvas, and any other form of approved electronic communication.

VI. Success, Retention, and Equity

Describe how the program works to promote student success. Include teaching innovations, use of academic and student support services (library, counseling, LAP, community partnerships, etc.). Refer to list of Student Services.

- Then, utilizing data from the office of Institutional Research and Planning, report on student success through course completion and retention data. Analyze, by discipline, success by gender, age, ethnicity, and online (may analyze other variables such as disability, English as a second language, day vs. night courses, etc. as appropriate).

- Suggest possible reasons for these trends and planned actions to address any disproportionate impact.

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. As a result, a student can start in a development course, such as Math 309, and be ready for a transfer level course(Math 100 or Math 123) in only two semester.

As stated in Part V above, 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 good environment for individual or group study, in-house loans of current textbooks, supplemental books and videos for check out, calculator rentals (both in-house loans and semester rentals), and various handouts on mathematics topics.

The MESA 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.

VII. Trend Analyses/Outlook

Using the information already gathered in the Annual Updates s (e.g., enrollment and achievement data; student learning outcomes assessment and analysis; input by advisory boards; existing articulation agreements; labor market trends) summarize the major trends, challenges, and opportunities that have emerged in the program since the last comprehensive program review. Explain possible causes for any identified gaps or trends and actions taken or needed to address these.

To serve students better we need adequate lecture rooms, teaching staffs, enough student tutors (especially for Statistics and Calculus courses) for the Math Center, the second computerized classroom, and sufficient equipment and supplies.

One full-time faculty member retired in May 2020 and we have one more retirement expected by the end of next year (May 2021). We need to hire at least two-full time faculty members.

As applicable, please address the breadth, depth, currency, and cohesiveness of the curriculum in relation to evolving employer needs and/or transfer requirements, as well as other important pedagogical or technology -related developments and actions taken or needed to address these.

Course Identification Numbering System (C-CID). C-ID is a numbering system being developed to ease the transfer and articulation burdens in California's higher educational institutions:

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.

VIII. Long-Term Program Goals and Action Plans (Aligned With the College Educational Master Plan)

Describe the long-term plans for changing or developing new courses and programs, other actions being taken to enhance student success, and the need for professional development activities and other resources to implement program goals. Be sure to show how these plans are related to assessment results. (Plan should cover five- year period and include target dates and resources needed.)

Long –Term Program Goals:

1. Continue to use Student Learning Outcome data to improve teaching and to support student access, achievement, and success (Goals SLS1, SLS2).

2. Ensure students are directed by helping students clarify their aspirations, develop an educational focus they perceive as meaningful and develop a plan that moves them from enrollment to achievement of their goal (Goal SLS3).

3. Ensure students are focused by fostering students' motivation and helping them develop the skills needed to achieve their goals (Goal SLS4).

4. Nurture students by conveying a sense of caring where students' success is important and expected (Goal SLS5).

5. Engage students by actively involving students in meaningful and authentic educational experiences and activities inside and outside the classroom (Goal SLS6).

6. Ensure students are connected by creating connections between students and the institution and cultivating relationships that underscore how students' involvement with the college community can contribute to their academic and personal success (Goal SLS 7).

7. Value student contributions by providing students with opportunities to contribute towards the enrichment of the college culture and community (Goal SLS 8).

Action Plans:

1. Continue to promote high academic standards for the Mathematics Department in helping students achieve success with the Student Learning Outcomes while making efforts to make mathematics accessible to as many students as possible (SLS6, SLS7).

2. 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 (SLS1, SLS2, SLS3, SLS5).

3. Continue to remain current in both mathematics and technology (IR3).

4. Hire at least two full-time math faculty. Plan for potential retirements of full-time mathematics faculty prior to the next program review in 2026 (IR1, IR2).

5. Recruit and hire new part-time math instructors and increase the size of the qualified math instructor pool (IR1).

6. Increase the number of class sections as demand necessitates (SLS1, SLS2, SLS3, SLS5, SLS6, SLS7).

7. Continue to consider accommodations for students who cannot attend day time classes. Offer evening classes, summer classes, and online classes (SLS2, SLS3, SLS4, SLS5, SLS7).

8. Maintain class offerings at both the Santa Maria campus and the Lompoc Valley Center (SLS2, SLS3).

9. Continue to evaluate and update curriculum, maintaining course currency through AP&P (SLS1, SLS2, SLS3).

10. Continue to volunteer for Friday Night Science and Bow -Wow. Continue to participate in college outreach efforts (SLS2, SLS3, SLS6).

11. Expand the Math Center hours of operation during the weekends (Sundays) (IR2).

12. Hire additional student tutors (especially tutors for Statistics and Calculus courses) for the Math Center (IR2).

13. Expand Math Center space or move to a bigger room to accommodate additional students. (IR4).

14. Renovate the M 400 block of classrooms (IR4).

15. Continue monitoring articulation feedback from universities (IE1).

16. Add a second computerized classroom/lab. Purchase computers and other needed equipment for a second computerized classroom (IR2, IR4).

STUDENT DATA SUMMARY

STUDENT DATA SUMMARY

Data analysis is a critical component of program review. The three categories below should be used as guidelines in developing a summary of the student data.

State at least three positive factors about the discipline/program identified by students. Include the number (or percentage) of students responding and any implications for planning.

1. Quality of Instruction: 86% of students were either highly satisfied or somewhat satisfied.
2. Content of Courses: 84% of students were either highly satisfied or somewhat satisfied.
3. Course Assistance: 83% of students were either highly satisfied or somewhat satisfied.

The results above indicate that our mathematics courses provide appropriate content for our students and are taught by good instructors. The Math Center continues to be an excellent resource for our students. The high percentage for the Course Assistance question may be due primarily to the Math Center. Since our department may have additional retirements in the next few years, we will need to hire good instructors.

State at least three negative factors about the discipline/program identified by students. Include the number (or percentage) of students responding and any implications for planning.

Note: Calling the following factors 'negative' is a bit misleading, since overall the students gave them positive ratings.

1. Textbook: 9% of students are highly dissatisfied or somewhat dissatisfied. 15% of students are neither satisfied nor dissatisfied.
2. Counselors: 7% of students are highly dissatisfied or somewhat dissatisfied. 29% of students are neither satisfied nor dissatisfied.
3. Attitude about Mathematics: 40% of students remained the same and 11% of students decreased.

State any other information (use responsive numbers) that you obtained from student data (e.g. focus groups, questionnaires, or SGIDs) that may be of special interest to the self study team. What planning implications will result from this information?

1. Textbooks and Other Materials: 87% of students were either highly satisfied or somewhat satisfied.

2. Intellectual Growth: 87% of students were either highly satisfied or somewhat satisfied.

3. Availability of Mathematics Courses: 84% of students were either highly satisfied or somewhat satisfied.

4. Mathematics Content Presented in Canvas: 84% of students were either highly satisfied or somewhat satisfied.

The Mathematics Department will continue to provide quality instruction for the students by choosing textbooks appropriately, promoting the importance of intellectual development, providing a wide variety of mathematics courses each semester with multiple sections at different times, and developing good mathematical content through Canvas. We have faced an additional challenge of transitioning our mathematics courses to the online environment during the COVID pandemic, but from the student data, a high percentage of students responded that we are doing a good job. We will have to continue to improve our online instruction to better meet the needs of our diverse student body.

SURVEY USED FOR STUDENT DATA COLLECTION

Survey:	Math Program Review
Instructions:	Please have all students complete the program review survey in class using mobile device, lab or classroom computers, post on Canvas and/or email to students.
Survey link:	http://bit.ly/AHC_PR_Math
QR Code:	
QR Code Instructions:	Users can scan the above code with a QR Reader app or using the camera app on their mobile device. For iPhones with iOS 11, the camera app allows you to scan QR codes. All you need to do is open the camera app, point the camera at the QR code and the camera will read the QR code and provide you with a notification to access the content. For Android phones, you can open the camera, focus it on QR code and press and hold the Home button. The URL for the survey should appear and you can click on the link. If this does not work for your phone, download QR reader.

Q10 **Please answer the following questions as they pertain to your experience in this course and all other courses in the **PROGRAM** at Allan Hancock College.**

Q11 **Part I. Please indicate how satisfied you are, in general, with the following aspects of the *PROGRAM***

	Highly satisfied	Somewhat satisfied	Neither satisfied nor dissatisfied	Somewhat dissatisfied	Highly dissatisfied	No Opinion
Quality of instruction within the program	○	○	○	○	○	○
The way textbooks and other materials used in courses within the program help me learn	○	○	○	○	○	○
Advice about the program from counselors	○	○	○	○	○	○
The way this program meets your educational goals	○	○	○	○	○	○
Contribution towards your intellectual growth	○	○	○	○	○	○
Clarity of course goals and learning objectives	○	○	○	○	○	○
Feedback and assessment of progress towards learning objectives	○	○	○	○	○	○
The availability of courses offered in the **PROGRAM**	○	○	○	○	○	○

The content of courses offered in the **PROGRAM**	○	○	○	○	○	○
The coordination of courses offered in the **PROGRAM** and courses offered in other departments that may be required for your major	○	○	○	○	○	○
Presentation of classes via the college's Canvas course management system	○	○	○	○	○	○
Course assistance through tutorial services (e.g through the Tutorial Center, Math Lab, Writing Center)	○	○	○	○	○	○
Availability of appropriate resources in the libraries	○	○	○	○	○	○

Page Break

Q12 **Part II. Please answer the following questions about the **PROGRAM**.**

Q13 Which of the following best describes your reason for taking this and other courses in **PROGRAM**?

- ○ Recommended by a counselor
- ○ Recommended by a friend
- ○ To meet general education requirements
- ○ Offered at a convenient time
- ○ Other, please specify: ____________________

Q14 Compared to the beginning of the semester, your attitude about **PROGRAM** has

- ○ Improved
- ○ Remained the same
- ○ Decreased

Q15 Please answer the following questions.

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
I would recommend taking courses in **PROGRAM**	○	○	○	○	○
I plan on taking additional courses in **PROGRAM**	○	○	○	○	○

Q16 Which of the following courses have you taken in **PROGRAM**?

- ☐ **Math 100
- ☐ Math 105
- ☐ **Math 121
- ☐ Math123
- ☐ Math 123S
- ☐ Math 131
- ☐ Math 131S
- ☐ Math 135
- ☐ Math 135S
- ☐ Math 141
- ☐ Math 141S
- ☐ Math 181

- [ ] Math 182
- [ ] Math 183
- [ ] Math 184
- [ ] Math 189
- [ ] Math 309
- [ ] Math 311
- [ ] Math 321
- [ ] Math 331
- [ ] Math 331S
- [ ] Math 521
- [ ] Math 531

Q17 Which courses are you taking this semester in **PROGRAM**?

- Math 100
- Math 105
- Math 121
- Math 123
- Math 123S
- Math 131
- Math 131S
- Math 135

- Math 135S
- Math 141
- Math 141S
- Math 181
- Math 182
- Math 183
- Math 184
- Math 189
- Math 309
- Math 311
- Math 321
- Math 331
- Math 331S
- Math 521
- Math 531

Page Break

Q18 **Part III. Background questions.**

Q19 How many units have you completed prior to this semester?

- 0-15 units
- 16-30 units
- 31-45 units
- 46-60 units
- 61 or more units

Q20 In how many units are you currently enrolled?

- less than 5 units
- 5 - 8.5 units
- 9 - 11.5 units
- 12 or more units

Q21 What is your final academic goal?

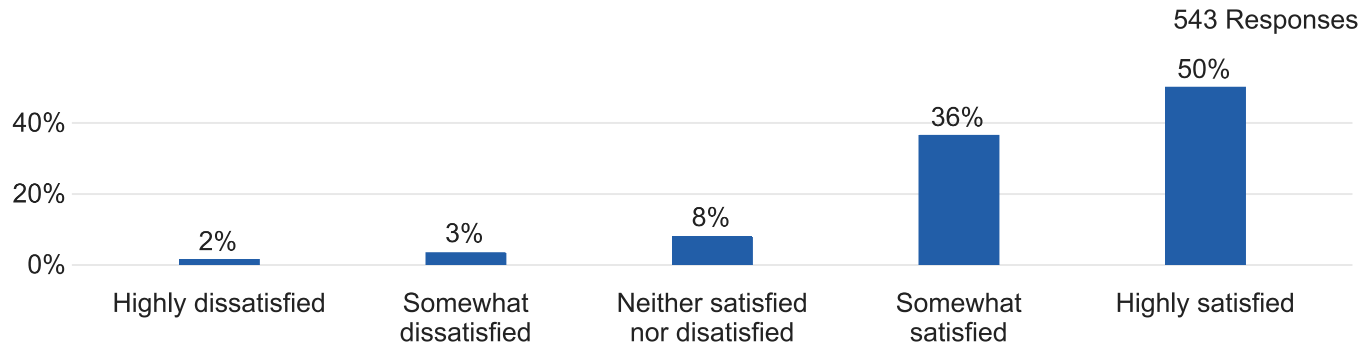
- Certificate
- AA/AS
- Bachelors
- Masters or higher
- Not certain

End of Block: Default Question Block

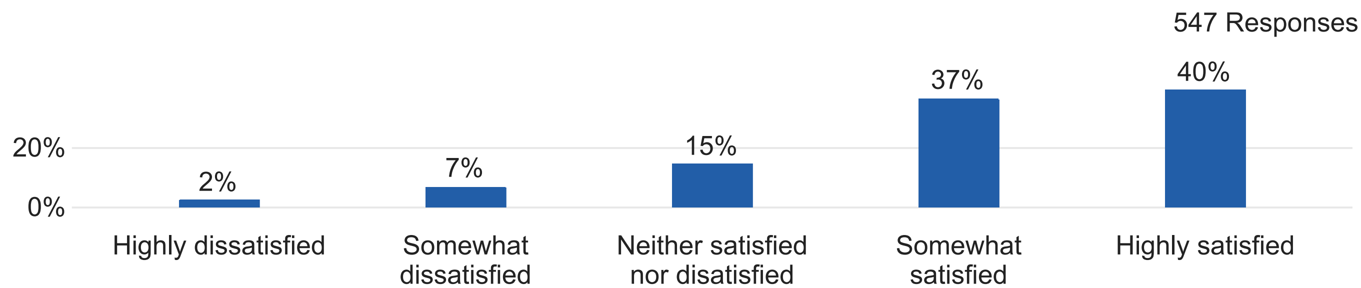
Mathematics Program Review
Fall 2020

Please answer the following questions as they pertain to your experience in this course and all other courses in the Mathematics program at Allan Hancock College.

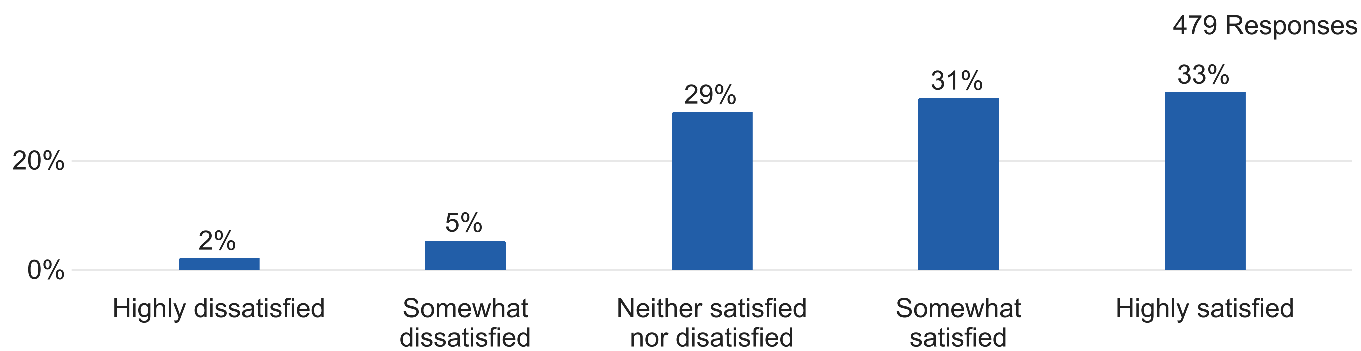
Q2_1 - Quality of instruction within the program



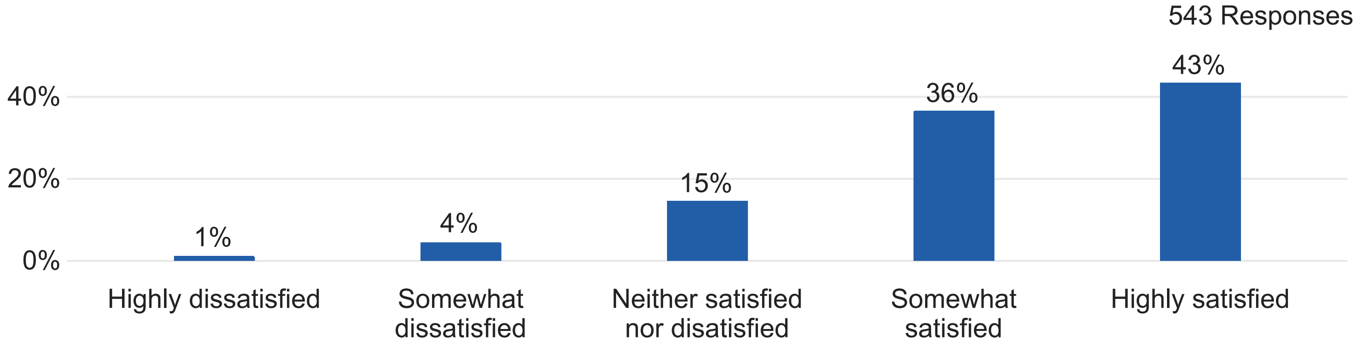
Q2_2 - The way textbooks and other materials used in courses within the program help me learn



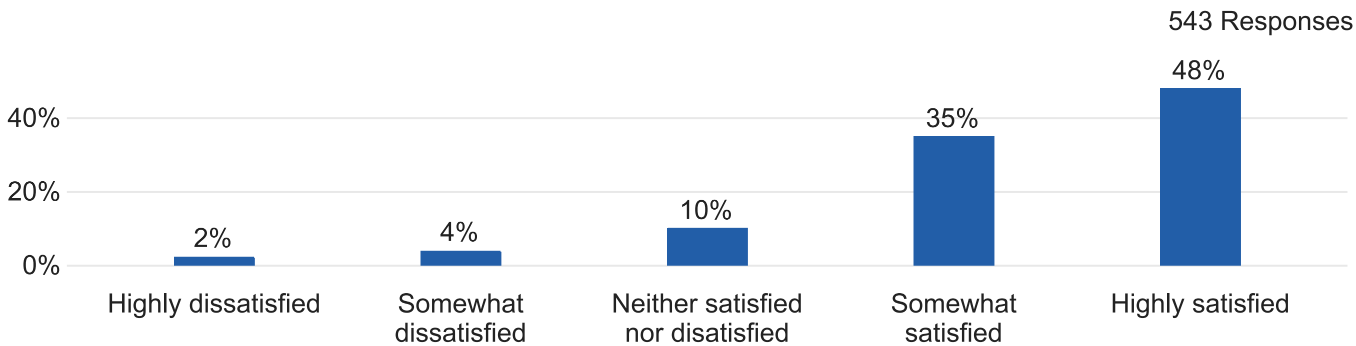
Q2_3 - Advice about the program from counselors



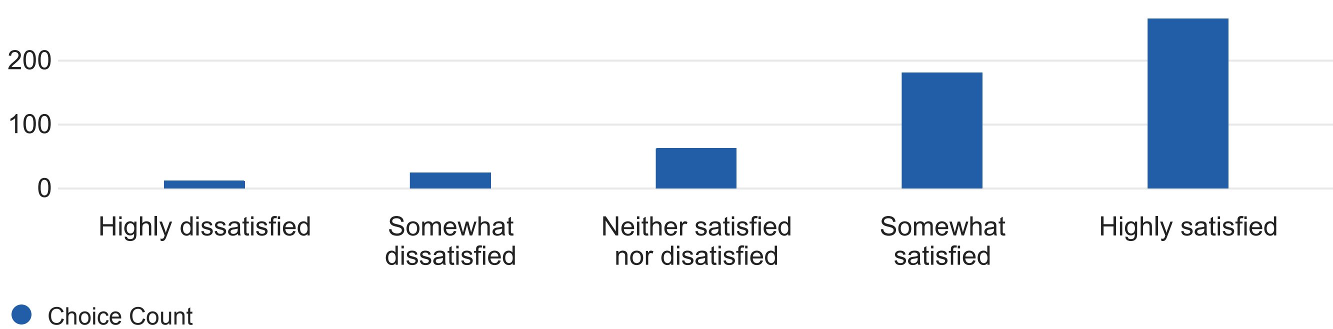
Q2_4 - The way this program meets your educational goals



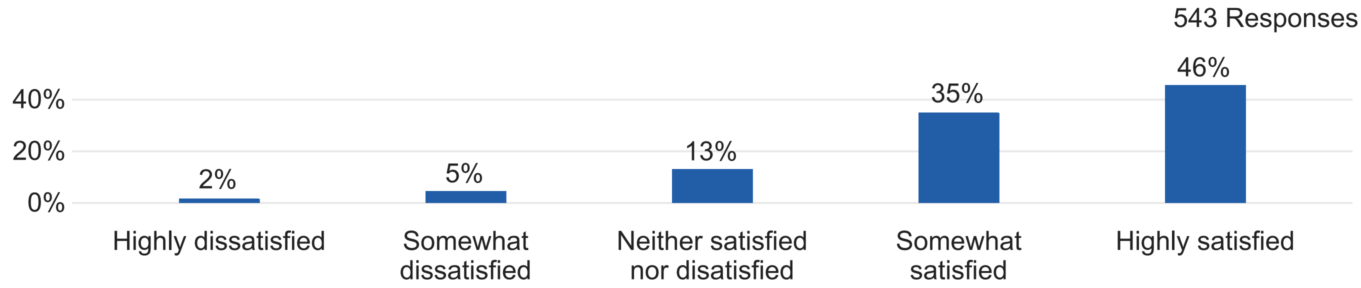
Q2_5 - Contribution towards your intellectual growth



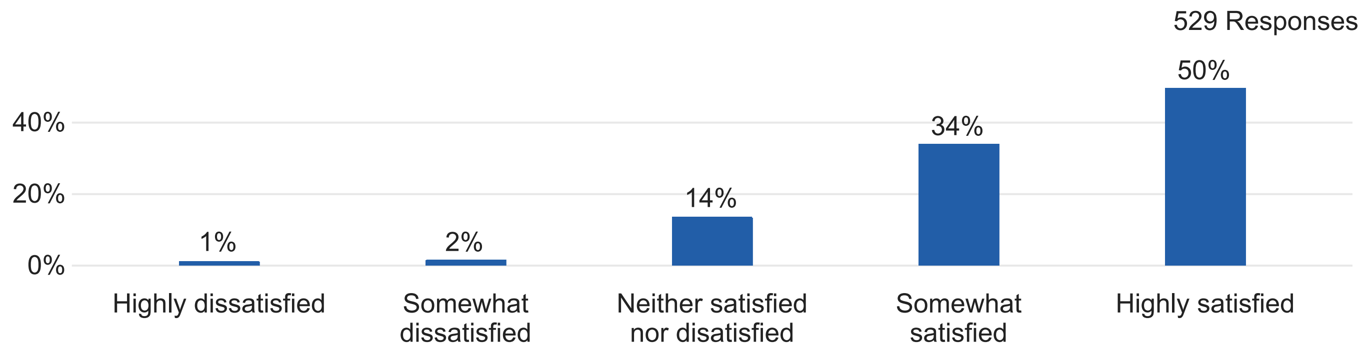
Q2_6 - Clarity of course goals and learning objectives



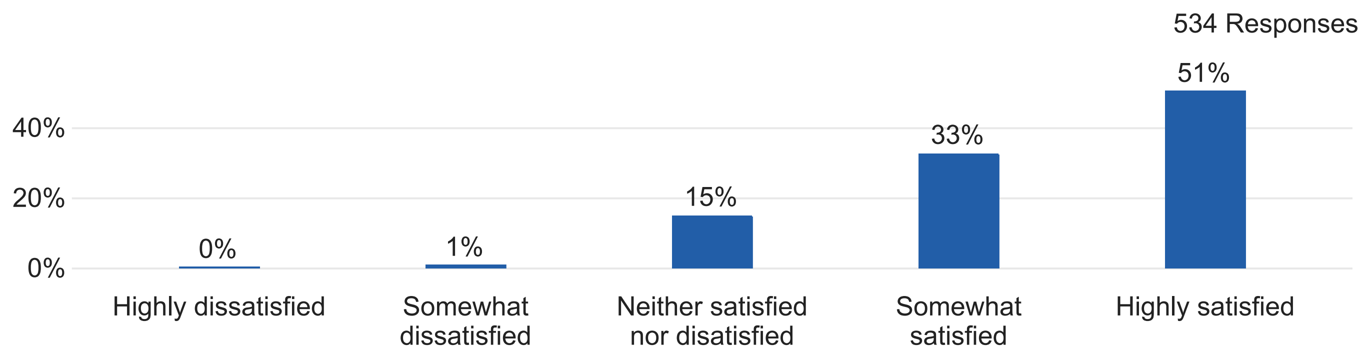
Q2_7 - Feedback and assessment of progress towards learning objectives



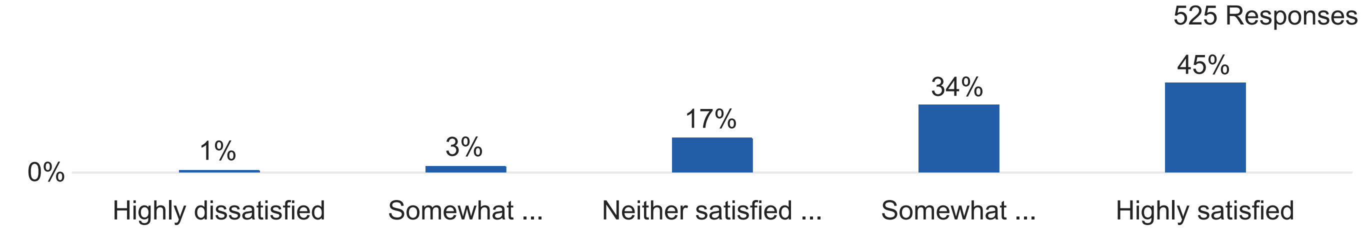
Q2_8 - The availability of courses offered in the Mathematics program



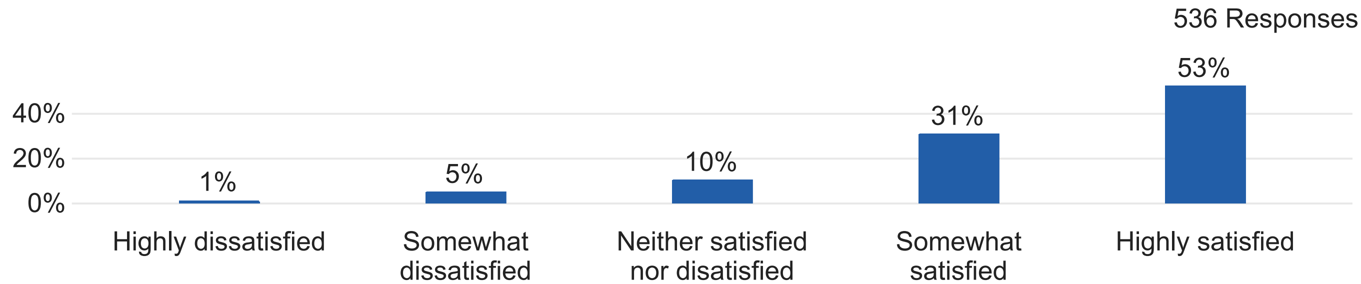
Q2_9 - The content of courses offered in the Mathematics program



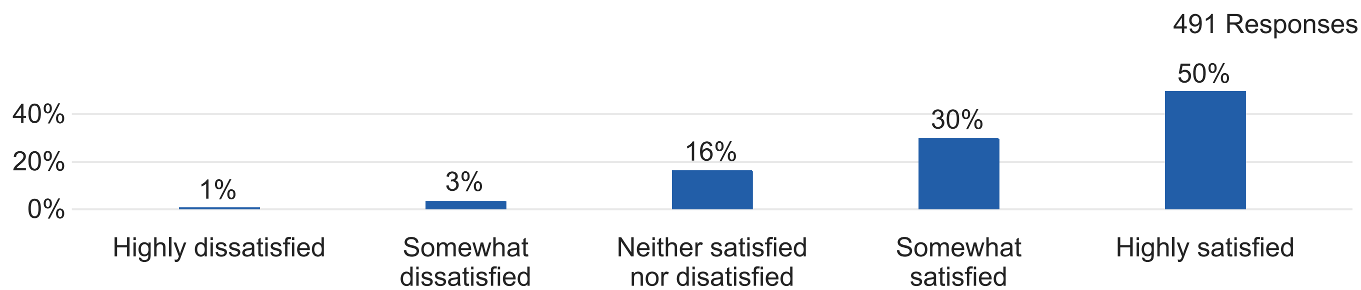
Q2_10 - The coordination of courses offered in the Mathematics program and courses offered in other departments that may be required for your major



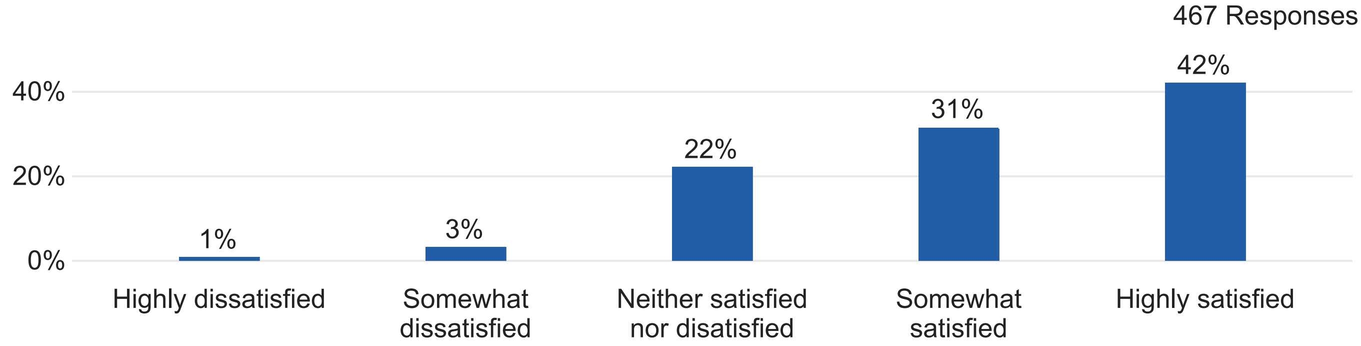
Q2_11 - Presentation of classes via the college's Canvas course management system



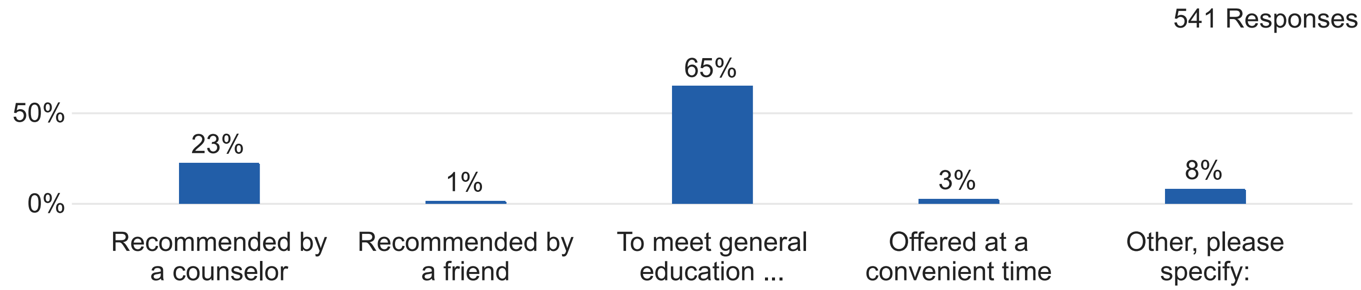
Q2_12 - Course assistance through tutorial services (e.g through the Tutorial Center, Math Lab, Writing Center)



Q2_13 - Availability of appropriate resources in the libraries

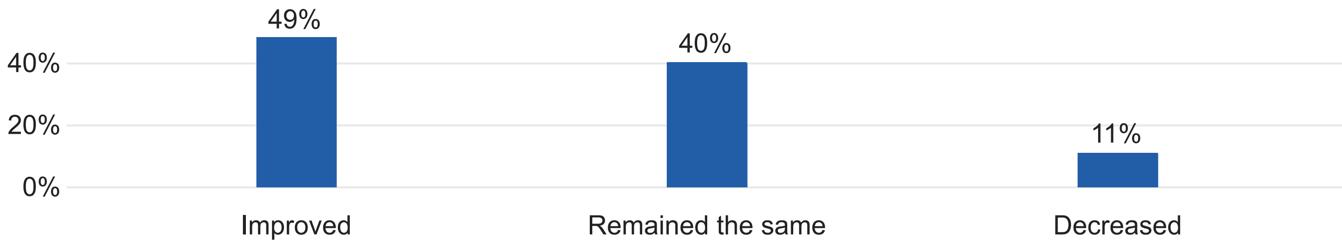


Q4 - Which of the following best describes your reason for taking this and other courses in Mathematics? - Selected Choice



Q5 - Compared to the beginning of the semester, your attitude about Mathematics has

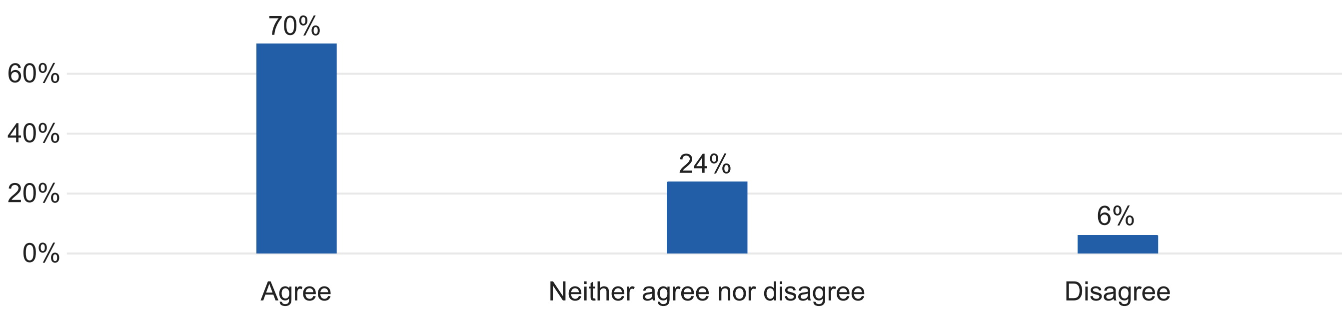
542 Responses



Q6 - Please answer the following questions.

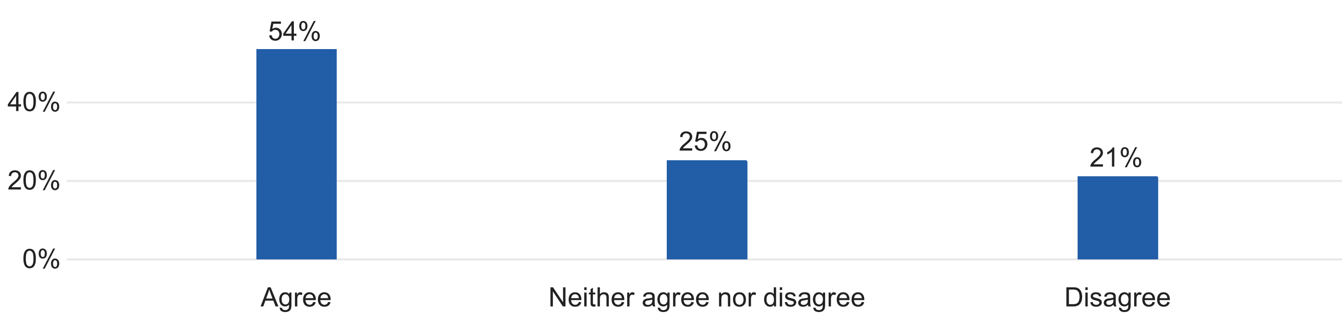
Q6_1 - I would recommend taking courses in Mathematics

542 Responses



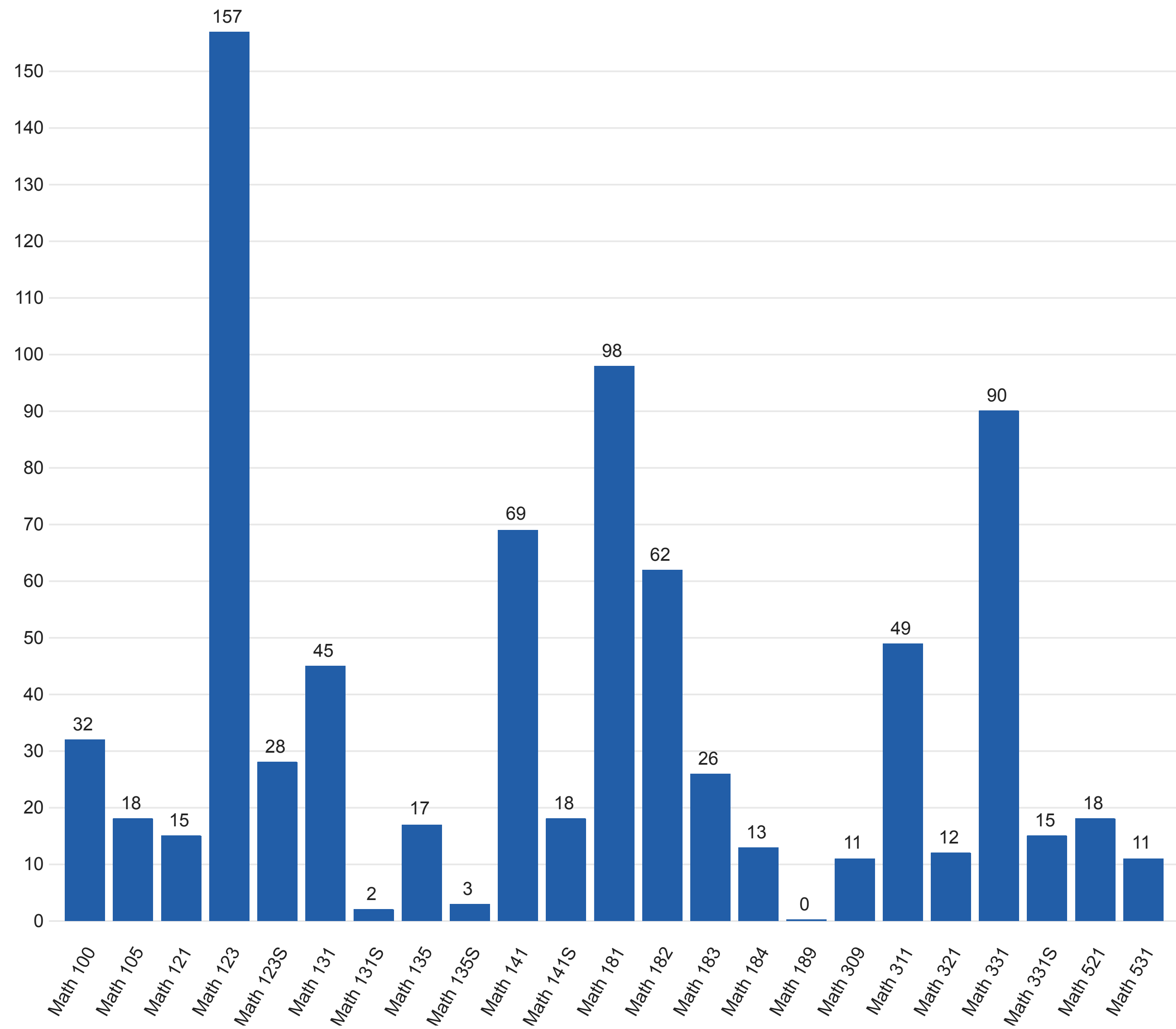
Q6_2 - I plan on taking additional courses in Mathematics

539 Responses



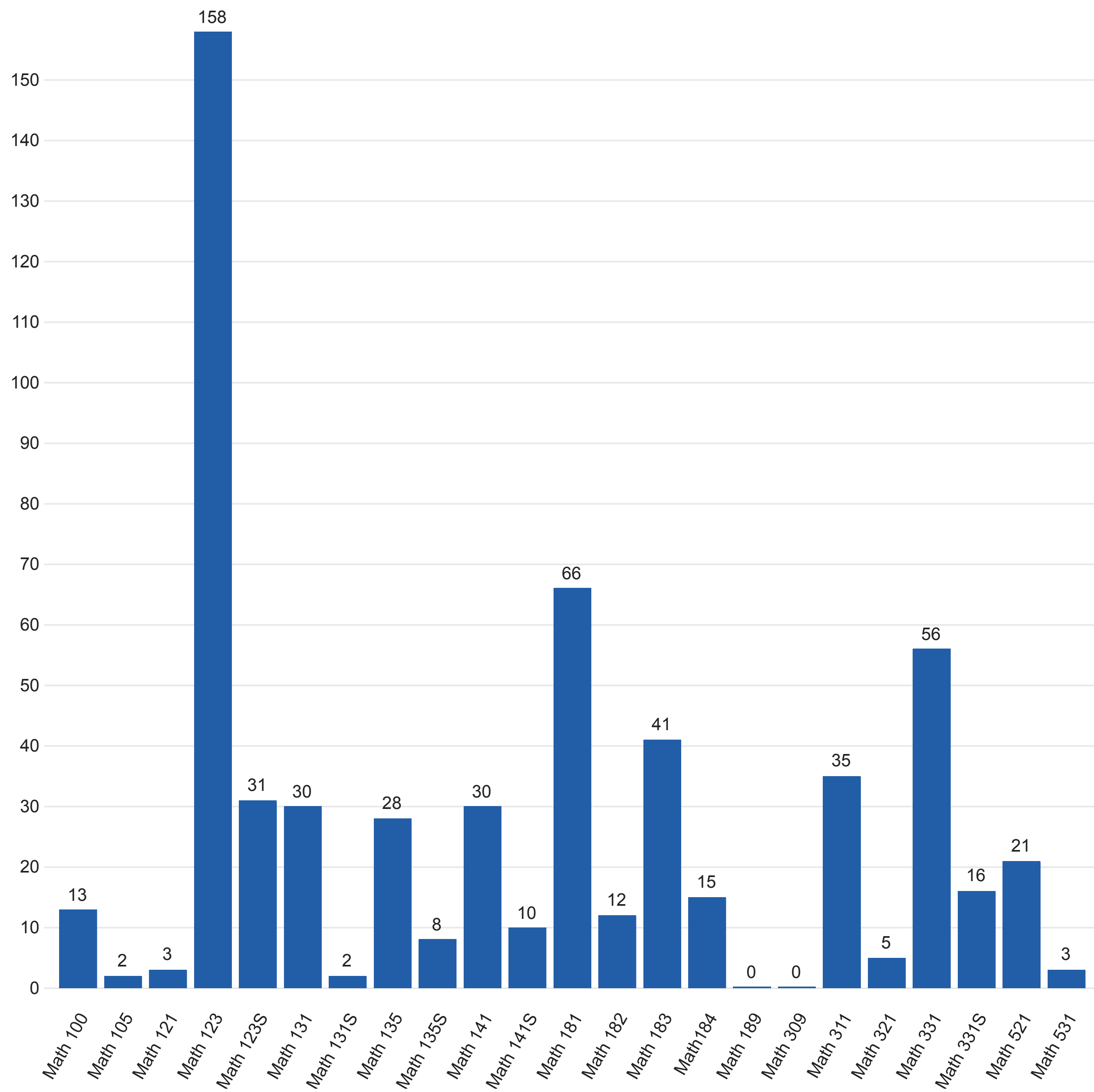
Q7 - Which of the following courses have you taken in Mathematics? (Select all that apply)

440 Responses

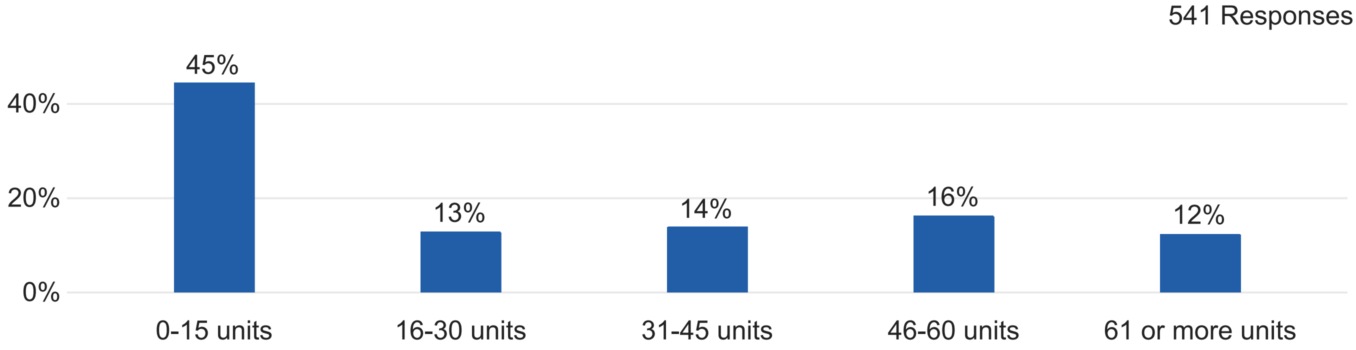


Q8 - Which courses are you taking this semester in Mathematics? (Select all that apply).

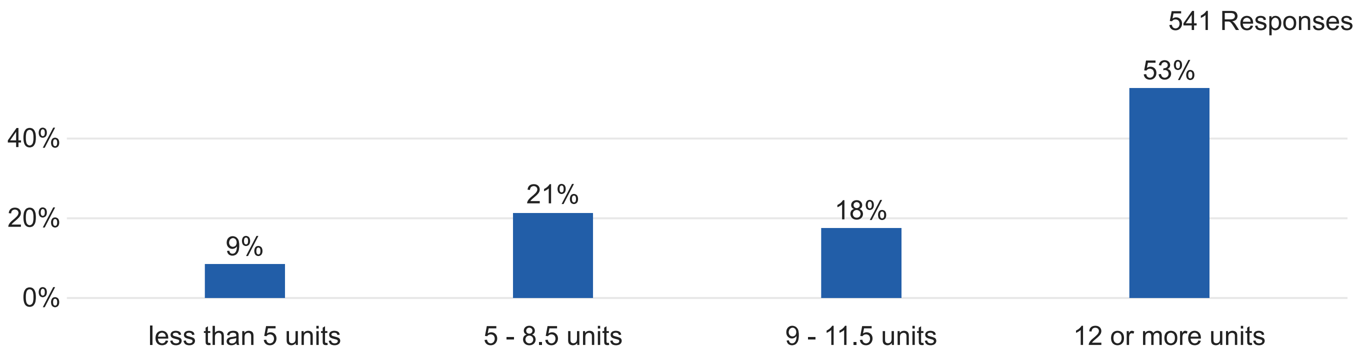
514 Responses



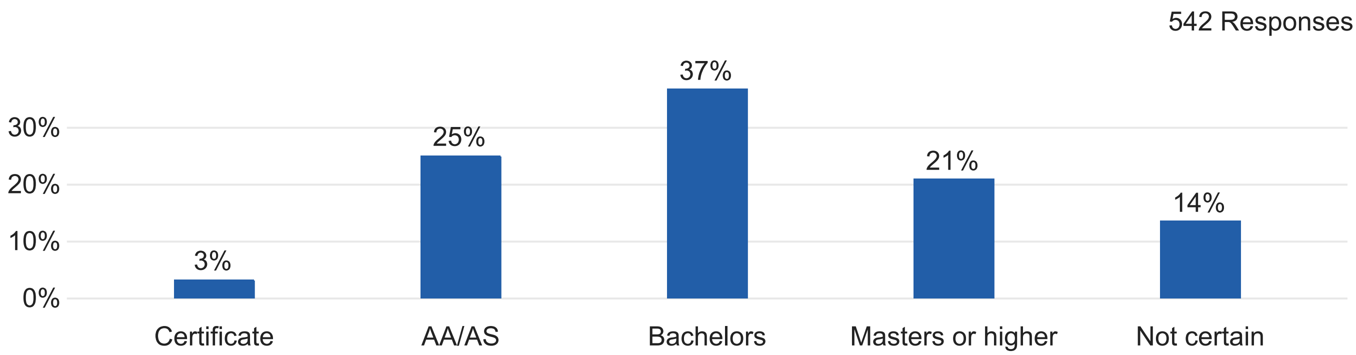
Q10 - How many units have you completed prior to this semester?



Q11 - In how many units are you currently enrolled?



Q12 - What is your final academic goal?



ASSESSMENT PLAN

Assessment Plan

This part of the program review demonstrates alignment of courses with coverage of program student learning outcomes and lays out the program's plans for conducting assessments over the forthcoming five years.

Mission

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.

Program Outcomes

1. MATH PSLO – Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
2. MATH PSLO – Represent mathematical information symbolically, graphically, numerically, and in writing.
3. MATH PSLO – Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
4. MATH PSLO – Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
5. MATH PSLO – Check mathematical results for reasonableness.
6. MATH PSLO – Use appropriate technologies to analyze and solve mathematical problems.

Course/Program Alignment

Mathematics Program Outcomes (I=Intro, D=Develop, M=Mastery)						
Course	PSLO 1	PSLO 2	PSLO 3	PSLO 4	PSLO 5	PSLO 6
MATH521	I	I	I	I	I	I
MATH 309	I	I	I	I	I	D
MATH 311	I	D	D	D	I	D
MATH 331	D	M	M	M	D	D
MATH 321	I	D	D	D	I	D
MATH 121	M	M	M	D	M	D
MATH 131	M	M	M	D	M	D
MATH 141	M	M	M	D	M	D
MATH 181	M	M	M	M	M	M
MATH 182	M	M	M	M	M	M
MATH 183	M	M	M	M	M	M
MATH 184	M	M	M	M	M	M
MATH 135	M	M	M	M	M	M
MATH 100	D	D	D	D	D	D
MATH 123	D	M	M	D	D	D
MATH 105	M	D	D	M	M	I

Implementation of Assessment

Responsibility for implementing the assessment lies with the entire department. Confident that outcomes are reflected in actual coursework of your major/program, describe the mechanisms for assessment. Think of assessing your outcomes on a 4 or 5 year cycle. (If you have 10 outcomes assessing 2 a year is ideal.)

AssessmentCycle

Use one row for each Program outcome. *Your 6-Year assessment schedule can be inserted here, if you've already completed it.*

.Program Outcome	Tobe assessed in semester:	Assessment method (s)	Team to review assessment results	Resources needed to conduct assessment	Individual responsible for assessment report	Date we expect to complete review
1. Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.	Fall 2021	TBD	TBD	None	TBD	Spring 2022
2. Represent mathematical information symbolically, graphically, numerically, and in writing.	Fall 2021	TBD	TBD	None	TBD	Spring 2022
3. Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	Fall 2022	TBD	TBD	None	TBD	Spring 2023
4. Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.	Fall 2022	TBD	TBD	None	TBD	Spring 2023
5. Check mathematical results for reasonableness.	Fall 2023	TBD	TBD	None	TBD	Spring 2024
6. Use appropriate technologies to analyze and solve mathematical problems.	Fall 2023	TBD	TBD	None	TBD	Spring 2024

Data for all outcomes will be collected every year, except for the alumni survey associated with Outcome 2. This will be collected every other year when we collect information for our alumni newsletter. Analysis of the data will follow the schedule given above.

The department chair is responsible for gathering the assessment data and insuring that discussion takes place.

Dissemination of Information

Results will be shared in a special department meeting once a year. This will occur near the end of the academic year as soon as exam data for the year are available. In addition, written summaries will be shared with the Learning Outcomes and Assessment Committee, the dean, and the Vice President, Academic Affairs.

REVIEW OF PREREQUISITES, COREQUISITES, AND ADVISORIES

REVIEW OF PREREQUISITES, COREQUISITES, AND ADVISORIES
Summary

List all courses in Discipline/Program

Course Prefix No	**CURRENT** Prerequisite/Coreq/Advisory/ Limitation on Enrollment	**LEVEL OF SCRUTINY** (Statistics, Content Review, UC/CSU Comparison, Student Survey – list all)	**RESULT** (i.e., current PCA is established, should be dropped/modified or new PCA is established)	**ACTION TO BE TAKEN** (None, APP- Major or Minor)
MATH 100	Prereq: Math 309 or Math 331 or Math 333/334	Content Review	Current PCA established	None
MATH 105	Prereq: Math 331 or Math 333/334	Content Review	Current PCA established	None
MATH 121	Prereq: Math 331 or Math 333/334	Content Review	Current PCA established	None
MATH 123	Prereq: Math 309 or Math 331 or Math 333/334	Content Review	Current PCA established	None
MATH 123S	Coreq: Math 123	Content Review	Current PCA established	None
MATH 131	Prereq: Math 331 or Math 334	Content Review	Current PCA established	None
MATH 131S	Coreq: Math 131	Content Review	Current PCA established	None
MATH 135	Prereq: Math 331	Content Review	Current PCA established	None
MATH 135S	Coreq: Math 135	Content Review	Current PCA established	None
MATH 141	Prereq: Math 331 or Math 334	Content Review	Current PCA established	None
MATH 141S	Coreq: Math 141	Content Review	Current PCA established	None
MATH 181	Prereq: Math 141 or both Math 121 and Math 131	Content Review	Current PCA established	None
MATH 182	Prereq: Math 181	Content Review	Current PCA established	None
MATH 183	Prereq: Math 182	Content Review	Current PCA established	None
MATH 184	Prereq: Math 182	Content Review	Current PCA established	None
MATH 309	Prereq: Math 521 or Math 531	Content Review	Current PCA established	None
MATH 311	Prereq: Math 531 or Math 521 or Math 579A	Content Review	Current PCA established	None
MATH 321	Prereq: Math 309 or Math 311 or Math 313/314	Content Review	Current PCA established	None
MATH 331	Prereq: Math 309 or Math 311 or Math 313/314 Advisory: Math 321	Content Review	Current PCA established	None
MATH 331S	Coreq: Math 331	Content Review	Current PCA established	None
MATH 521	Not open to students who have passed Math 511	Content Review	Current PCA established	None

PLAN OF ACTION

(PRE-VALIDATION)

PLAN OF ACTION-PRE-VALIDATION
Six Year

DEPARTMENT: **Mathematical Sciences** PROGRAM: **Mathematics**

List below as specifically as possible the actions which the department plans to take as a result of this program review. Be sure to address any problem areas which you have discovered in your analysis of the program. Number each element of your plans separately and for each, please include a target date. Additionally, indicate by the number each institutional goal and objective which is
addressed by each action plan. (See Institutional Goals and Objectives)

RECOMMENDATIONS TO IMPROVE **STUDENT LEARNING OUTCOMES** AND ACHIEVEMENT	**Theme/Objective/ Strategy Number AHC from Strategic Plan**	**TARGET DATE**
1. Mathematics Department has the departmental retreat every semester to discuss and enter SLO data.	**SLS 1**	**Spring 2022, then ongoing**
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.	**SLS6, SLS7**	**Ongoing**
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.	**SLS1/SLS2/SLS3 SLS5**	**Ongoing**
4. Continue to remain current in both mathematics and technology.	**IR3**	**Ongoing**

RECOMMENDATIONS TO ACCOMMODATE CHAGES IN **STUDENT CHARACTERISTICS**	**Theme/Objective/ Strategy Number AHC from Strategic Plan**	**TARGET DATE**
Enrollment Changes		
1. Hire new full-time math instructors.	**IR1**	**Fall 2021**
2. Recruit and hire new part-time math instructors and increase the size of the qualified math instructor pool.	**IR1**	**Fall 2021**
3. Increase the number of class sections as demand necessitates.	**SLS1/SLS2/SLS3/ SLS5/SLS6/SLS7**	**Ongoing**

Demographic Changes 1. Continue to consider accommodations for students who cannot attend day time classes. Offer evening classes, summer classes, and online classes. 2. Maintain class offerings at both the Santa Maria campus and the Lompoc Valley Center.	**SLS2/SLS3/SLS4 SLS5/SLS7** **SLS2/SLS3**	**Ongoing** **Ongoing**
RECOMMENDATIONS TO IMPROVE THE **EDUCATIONAL ENVIRONMENT**	**Theme/Objective/ Strategy Number AHC from Strategic Plan**	**TARGET DATE**
Curricular Changes Continue to evaluate and update curriculum, maintaining course currency through AP&P.	**SLS1/SLS2/SLS3**	**Ongoing**
Co-Curricular Changes No co-curricular changes are planned at this time.		
Neighboring College and University Plans Continue monitoring articulation feedback from universities.	**IE1**	**Ongoing**
Related Community Plans Continue to volunteer for Friday Night Science and Bow -Wow. Continue to participate in college outreach efforts.	**SLS2/SLS3/SLS6**	**Ongoing**

RECOMMENDATIONS THAT REQUIRE ADDITIONAL RESOURCES	**Theme/Objective/ Strategy Number AHC from Strategic Plan**	**TARGET DATE**
Facilities 1. Renovate the M - 400 block of classrooms (A proper HVAC system should be installed). 2. The Math Center needs a larger space due to the fact that it cannot accommodate all the students during the peak hours. Expand or move to a bigger room (Students have suggested that Math Center needs more study rooms or individual study area). 3. Add a second computerized classroom/lab.	**IR4** **IR4** **IR2/IR4**	**Fall 2022** **Fall 2022** **Fall 2023**

Equipment		
1. Update all computerized equipment in M-201 as needed.	**SLS6**	**Fall 2021**
2. Purchase computers and other needed equipment for a second computerized classroom.	**IR2**	**Fall 2022**
Staffing		
1. One faculty member retired in May 2020 and one more faculty member will retire in May 2021. Hire at least 2 full-time faculty.	**IR1/IR2**	**Fall 2021**
2. Plan for potential retirements of full-time mathematics faculty prior to the next program review in 2026.	**IR1**	**As needed**
3. Expand the Math Center hours of operation during the weekends (Saturdays and Sundays).	**IR2**	**Fall 2021**
4. Hire additional student tutors (especially tutors for Statistics and Calculus courses) for the Math Center.	**IR2**	**Fall 2021**

EXHIBITS

Student Data

Statistics

Articulation Status of Course

Course Review Verification Sheet

STUDENT DATA

Program Data

STEP 1|Choose subjects: MATH

Subjects: MATH

STEP 2|Choose awards: Multiple values

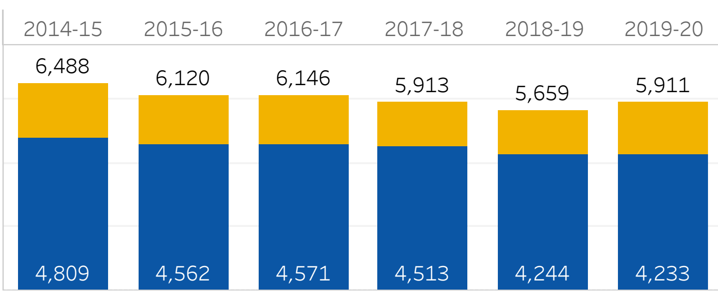
Awards: Mathematics & Mathematics for Transfer

STEP 3|Choose majors: Multiple values

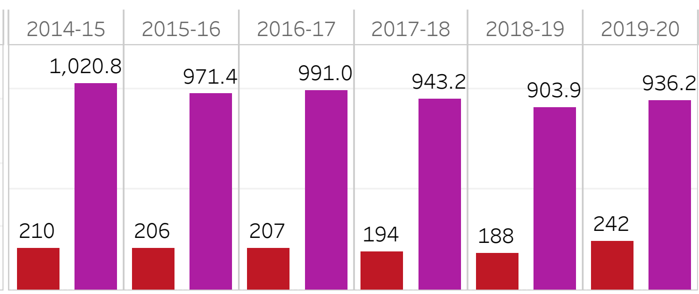
Student Majors: Mathematics, Mathematics for Transfer, Mathematics for Transfer UC

Quick Program Facts

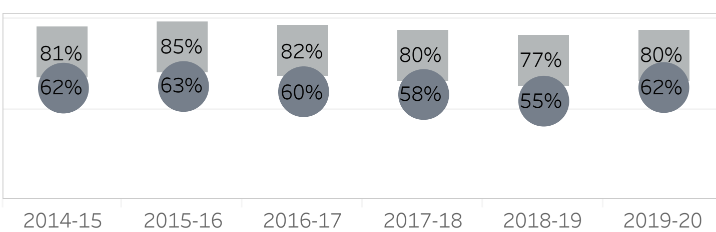
Headcount (undup)=Blue | Enrollment (dup)=Gold



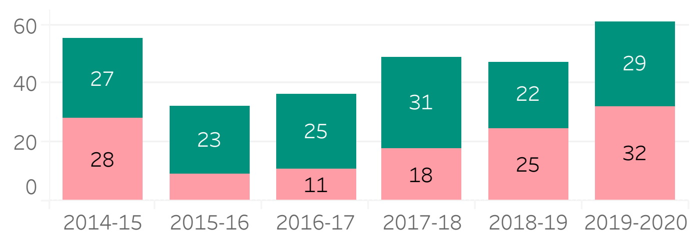
Sections=Red | FTES=Purple



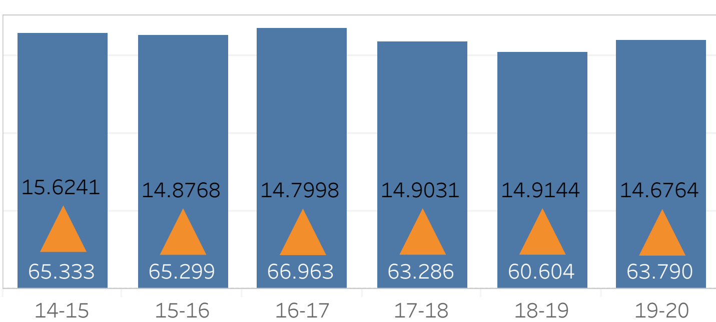
Retention=square | Success=circle



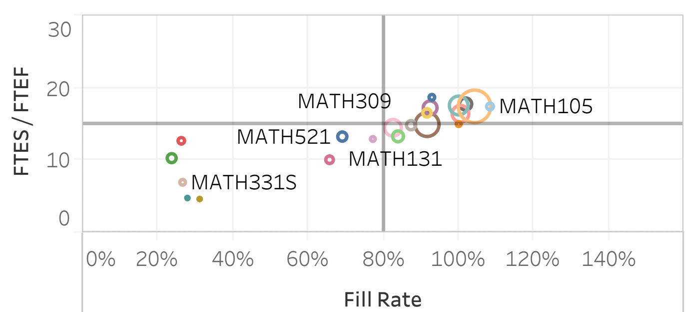
Credit Awards - Gold=Cert | Green=AA/AS / Pink=ADT



FTEF=Bar | FTES/FTEF=Triangle



Program Efficiency Fall 2019



Data Source: Student-MIS; Award, Major & Faculty-Banner | Headcount-unduplicated students; Enrollment-duplicated students; Retention-students who receive a grade in the course; Success-students who receive a passing grade in the course; FTES/FTEF target is 15+; Fill Rate target is 80%+

1 Outcomes MATH

course_
All

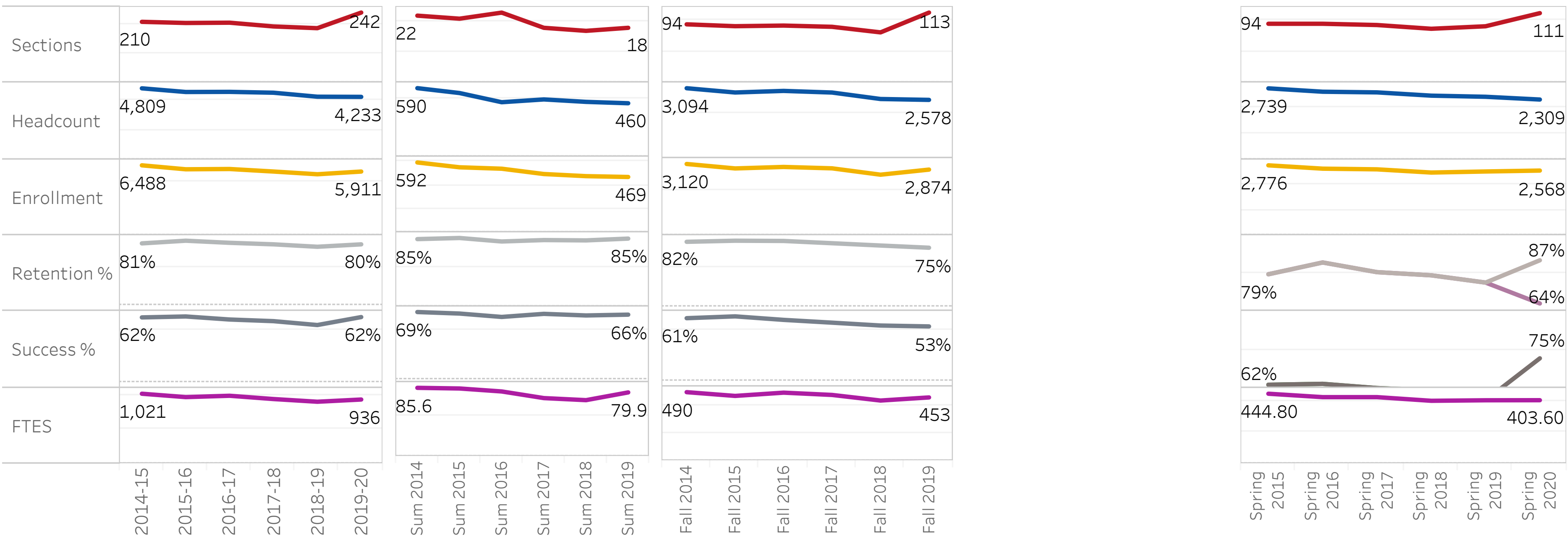
EW Grade
Exclude EW

	Sum 2014	Fall 2014	Spring 2015	Sum 2015	Fall 2015	Spring 2016	Sum 2016	Fall 2016	Spring 2017	Sum 2017	Fall 2017	Spring 2018	Sum 2018	Fall 2018	Spring 2019	Sum 2019	Fall 2019	Spring 2020
Sections	22	94	94	21	91	94	23	92	92	18	90	86	17	81	90	18	113	111
Headcount	590	3,094	2,739	548	2,905	2,609	469	2,975	2,584	493	2,903	2,458	472	2,617	2,415	460	2,578	2,309
Enrollment	592	3,120	2,776	551	2,925	2,644	539	2,990	2,617	494	2,929	2,490	476	2,651	2,532	469	2,874	2,568
retained	502	2,561	2,204	475	2,442	2,264	441	2,487	2,107	413	2,351	1,963	396	2,050	1,899	399	2,133	1,642
Retention %	85%	82%	79%	86%	83%	86%	82%	83%	81%	84%	80%	79%	83%	77%	75%	85%	75%	87%
success	409	1,888	1,713	372	1,821	1,644	345	1,761	1,570	332	1,647	1,466	312	1,418	1,359	310	1,507	1,427
Success %	69%	61%	62%	68%	62%	62%	64%	59%	60%	67%	56%	59%	66%	53%	54%	66%	53%	75%
FTES	86	490	445	85	464	423	81	487	423	73	471	400	70	430	403	80	453	404

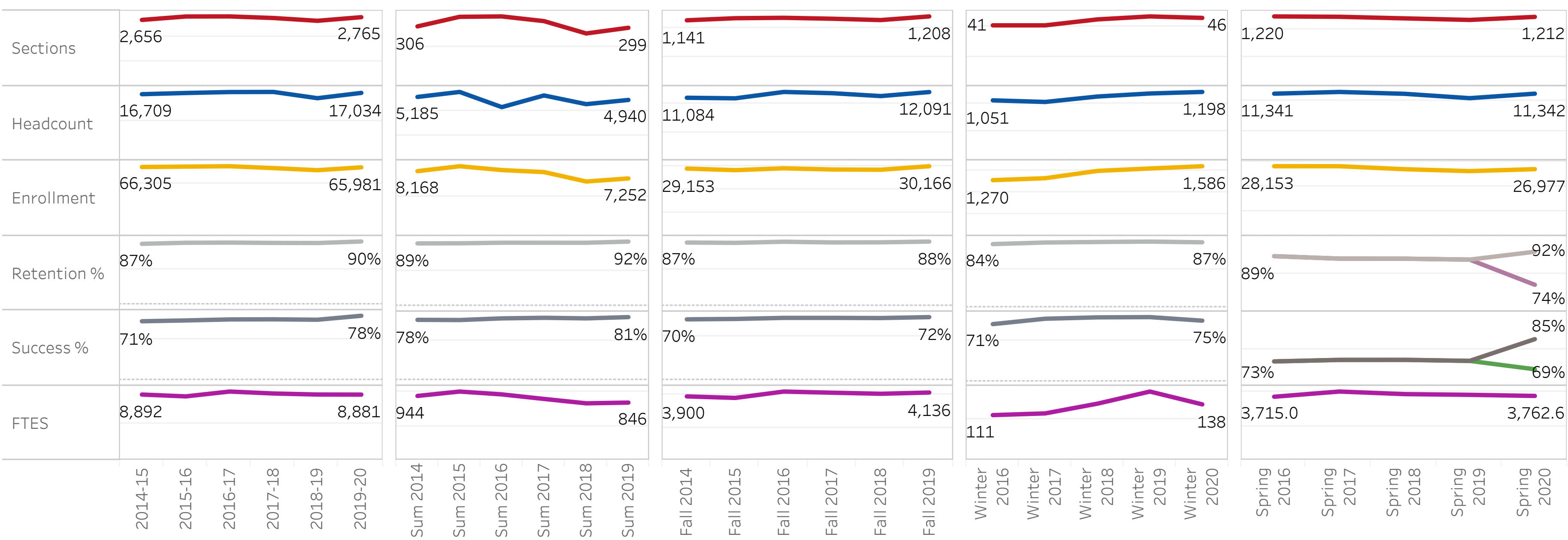
Outcomes Allan Hancock College Credit

	Sum 2014	Fall 2014	Spring 2015	Sum 2015	Fall 2015	Winter 2016	Spring 2016	Sum 2016	Fall 2016	Winter 2017	Spring 2017	Sum 2017	Fall 2017	Winter 2018	Spring 2018	Sum 2018	Fall 2018	Winter 2019	Spring 2019	Sum 2019	Fall 2019	Winter 2020	Spring 2020
Sections	306	1,141	1,209	355	1,177	41	1,220	357	1,184	41	1,214	333	1,168	45	1,186	270	1,145	47	1,159	299	1,208	46	1,212
Headco..	5,185	11,084	11,249	5,593	10,982	1,051	11,341	4,354	12,111	1,023	11,636	5,306	11,889	1,118	11,320	4,596	11,380	1,171	10,580	4,940	12,091	1,198	11,342
Enrollm..	8,168	29,153	28,984	8,789	28,471	1,270	28,153	8,305	29,268	1,314	28,161	8,052	28,754	1,480	26,960	6,868	28,650	1,535	26,193	7,252	30,166	1,586	26,977
Retention %	89%	87%	85%	90%	86%	84%	89%	90%	88%	87%	88%	90%	87%	87%	88%	90%	87%	88%	88%	92%	88%	87%	92%
Success %	78%	70%	71%	77%	70%	71%	73%	80%	71%	77%	74%	80%	71%	79%	74%	80%	71%	79%	74%	81%	72%	75%	85%
FTES	944	3,900	4,048	1,009	3,807	111	3,715	967	4,197	115	4,020	900	4,126	139	3,869	835	4,061	169	3,827	846	4,136	138	3,763

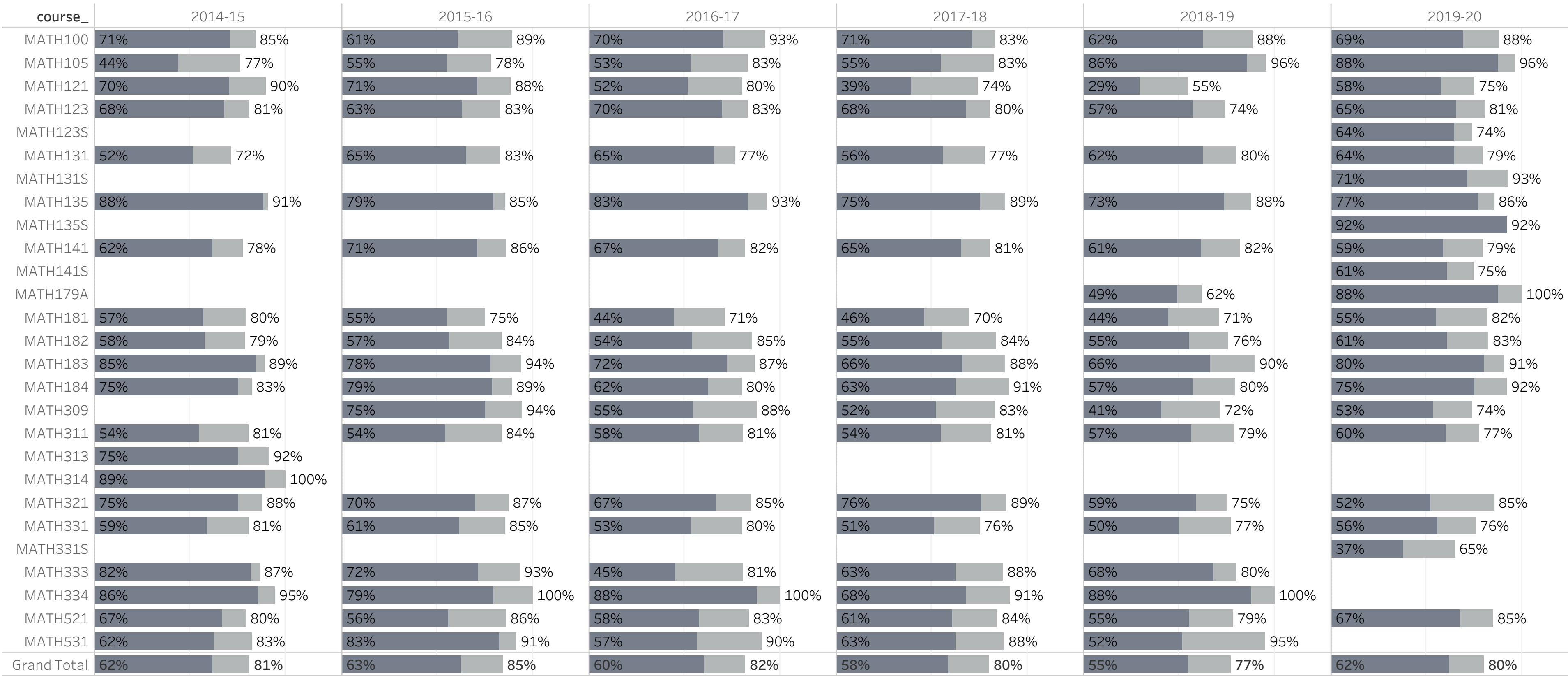
MATH Academic Year | Summer Terms | Fall Terms | Winter Terms | Spring Terms



AHC Credit Academic Year | Summer Terms | Fall Terms | Winter Terms | Spring Terms



1 Retention & Success by academic year by course MATH

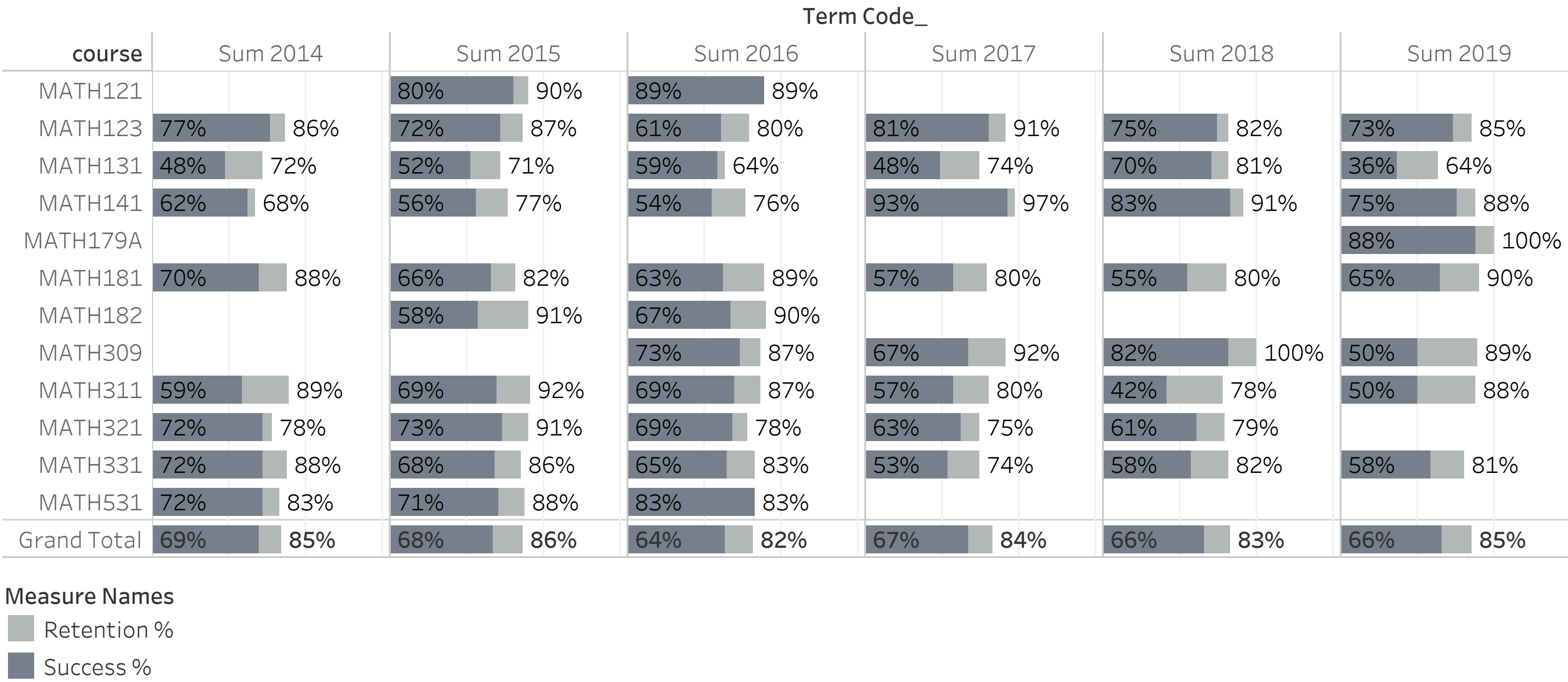


Retention % and Success % for each course_ broken down by Academic Year. Color shows details about Retention % and Success %. The data is filtered on TERM_CODE, CB04, subject and course. The TERM_CODE filter excludes 201410, 201420 and 201440. The CB04 filter keeps C, D and N. The subject filter keeps MATH. The course filter has multiple members selected.

Measure Names

- Retention %
- Success %

1 Retention & Success by summer term by course MATH



1 Retention & Success by fall term by course MATH

course_	Fall 2014	Fall 2015	Fall 2016	Fall 2017	Fall 2018	Fall 2019
MATH100	68% 82%	48% 88%	66% 89%	60% 80%	57% 82%	56% 85%
MATH105	37% 77%	55% 76%	58% 83%	35% 81%	86% 97%	87% 95%
MATH121	74% 86%	78% 94%	44% 78%	22% 61%	48% 70%	52% 69%
MATH123	65% 82%	64% 80%	71% 86%	65% 77%	60% 77%	58% 76%
MATH123S						54% 66%
MATH131	54% 75%	67% 84%	64% 75%	51% 74%	59% 81%	52% 74%
MATH131S						56% 89%
MATH135	88% 91%	94% 94%	95% 97%	68% 86%	69% 78%	55% 74%
MATH135S						80% 80%
MATH141	62% 82%	75% 86%	67% 82%	60% 78%	61% 82%	47% 74%
MATH141S						55% 71%
MATH181	55% 77%	52% 67%	48% 77%	49% 72%	47% 69%	40% 73%
MATH182	65% 85%	57% 83%	48% 80%	55% 90%	54% 77%	50% 77%
MATH183	80% 84%	69% 94%	76% 93%	67% 86%	69% 92%	74% 85%
MATH184	69% 80%	80% 89%	48% 72%	61% 84%	48% 74%	64% 86%
MATH309			54% 90%	50% 83%	33% 69%	45% 73%
MATH311	55% 82%	53% 82%	58% 81%	52% 83%	52% 78%	56% 72%
MATH313	75% 92%					
MATH321	73% 90%	66% 82%	68% 85%	77% 90%	62% 77%	37% 85%
MATH331	58% 82%	61% 86%	52% 83%	53% 80%	51% 78%	49% 72%
MATH331S						31% 56%
MATH333	82% 87%	72% 93%	45% 81%	63% 88%	68% 80%	
MATH521	67% 82%	65% 88%	52% 84%	55% 82%	51% 74%	63% 86%
MATH531	58% 82%	82% 89%	56% 92%	62% 92%	52% 95%	
Grand Total	61% 82%	62% 83%	59% 83%	56% 80%	53% 77%	53% 75%

Measure Names
- Retention %
- Success %

1 Retention & Success by spring term by course MATH

course_	Spring 2015		Spring 2016		Spring 2017		Spring 2018		Spring 2019		Spring 2020	
MATH100	75%	88%	76%	90%	76%	97%	81%	86%	66%	93%	83%	92%
MATH105	52%	76%	56%	81%	50%	83%	74%	84%	85%	94%	88%	98%
MATH121	66%	94%	59%	81%	46%	79%	52%	84%	14%	43%	65%	83%
MATH123	68%	79%	61%	84%	70%	82%	68%	81%	52%	71%	74%	87%
MATH123S											81%	87%
MATH131	49%	68%	65%	84%	68%	81%	64%	82%	64%	79%	83%	88%
MATH131S											100%	100%
MATH135	89%	91%	65%	76%	71%	89%	81%	91%	76%	94%	97%	97%
MATH135S											100%	100%
MATH141	62%	75%	71%	88%	73%	84%	57%	76%	51%	77%	66%	82%
MATH141S											75%	85%
MATH179A									49%	62%		
MATH181	56%	80%	55%	81%	36%	61%	40%	64%	36%	70%	79%	93%
MATH182	51%	72%	56%	82%	55%	88%	55%	79%	56%	75%	76%	90%
MATH183	89%	95%	87%	94%	69%	81%	65%	91%	63%	87%	87%	98%
MATH184	80%	85%	78%	89%	75%	87%	63%	94%	61%	82%	83%	97%
MATH309			75%	94%	54%	86%	54%	83%	48%	73%	68%	74%
MATH311	52%	77%	53%	84%	54%	79%	57%	80%	66%	81%	72%	83%
MATH314	89%	100%										
MATH321	78%	90%	72%	91%	66%	89%	81%	94%	54%	71%	71%	86%
MATH331	58%	78%	60%	85%	53%	76%	48%	70%	46%	75%	69%	83%
MATH331S											57%	90%
MATH334	86%	95%	79%	100%	88%	100%	68%	91%	88%	100%		
MATH521	67%	76%	47%	84%	65%	83%	69%	88%	62%	86%	83%	83%
MATH531	59%	83%	87%	95%	55%	88%	65%	76%				
Grand Total	62%	79%	62%	86%	60%	81%	59%	79%	54%	75%	75%	87%

Measure Names
- Retention %
- Success %

2 Program Demographics MATH

Choose individual course via filter or see Appendix A for full demographic course details

course_
All

Academic Year

Age Category	2014-15 Headcount	2014-15 FTES	2015-16 Headcount	2015-16 FTES	2016-17 Headcount	2016-17 FTES	2017-18 Headcount	2017-18 FTES	2018-19 Headcount	2018-19 FTES	2019-20 Headcount	2019-20 FTES
Under 20	1,928	409	1,903	409	1,977	443	2,059	434	2,053	449	1,968	438
20-24	1,844	369	1,706	352	1,693	350	1,571	316	1,399	284	1,440	309
25-29	543	109	516	106	503	99	458	92	394	75	422	84
30-34	232	50	216	42	199	38	208	41	226	45	193	41
35-39	141	28	119	23	134	25	127	24	90	18	116	25
40-49	177	43	145	29	113	23	147	26	119	22	127	27
50+	65	12	66	12	64	14	59	11	61	12	52	11

ETHNICITY	2014-15 Headcount	2014-15 FTES	2015-16 Headcount	2015-16 FTES	2016-17 Headcount	2016-17 FTES	2017-18 Headcount	2017-18 FTES	2018-19 Headcount	2018-19 FTES	2019-20 Headcount	2019-20 FTES
Asian	127	28	127	28	126	28	100	22	98	22	92	22
Black	159	38	166	32	128	26	141	27	112	21	111	25
Filipino	163	34	150	34	164	37	131	31	139	28	116	27
Hispanic	2,832	599	2,737	591	2,750	596	2,431	511	2,134	465	2,063	462
NativeAm	78	16	66	14	62	14	84	18	89	19	94	21
Other	1	0					1	0				
PacIsl	38	9	28	6	32	7	31	6	34	8	47	10
White	1,410	296	1,287	267	1,304	273	1,592	326	1,621	335	1,631	351

	2014-15 Headcount	2014-15 FTES	2015-16 Headcount	2015-16 FTES	2016-17 Headcount	2016-17 FTES	2017-18 Headcount	2017-18 FTES	2018-19 Headcount	2018-19 FTES	2019-20 Headcount	2019-20 FTES
Female	2,462	500	2,344	485	2,406	503	2,374	482	2,227	457	2,192	462
Male	2,344	520	2,215	486	2,151	475	2,112	455	1,976	438	1,921	447
Unknown	1	0	2	0	9	1	22	5	24	5	39	9

	2014-15 Headcount	2014-15 FTES	2015-16 Headcount	2015-16 FTES	2016-17 Headcount	2016-17 FTES	2017-18 Headcount	2017-18 FTES	2018-19 Headcount	2018-19 FTES	2019-20 Headcount	2019-20 FTES
First Time	1,278	207	1,197	196	1,286	213	1,173	194	1,272	213	942	175
First Time Transfer	183	30	216	35	193	31	232	38	199	33	169	29
Continuing	3,594	727	3,364	680	3,361	681	3,279	653	3,111	616	3,109	657
Returning	345	54	336	53	261	41	227	37	169	27	218	38
Special Admit	10	2	39	8	73	13	117	20	58	10	95	19
Unknown	1	0	1	0								
Grand Total	**4,807**	**1,020**	**4,561**	**971**	**4,566**	**980**	**4,507**	**942**	**4,227**	**899**	**4,152**	**918**

2 Demographics Allan Hancock College Credit

	2014-15		2015-16		2016-17		2017-18		2018-19		2019-20	
Age Category	Headcount	FTES	Headcount	FTES	Headcount	FTES	Headcount	FTES	Headcount	FTES	Headcount	FTES
Under 20	4,269	2,742	4,528	2,759	5,805	3,105	6,308	3,155	6,018	3,326	7,482	3,583
20-24	6,122	3,441	6,054	3,341	5,700	3,398	5,460	3,190	5,057	3,070	4,867	2,853
25-29	2,585	1,182	2,555	1,118	2,440	1,255	2,395	1,212	2,071	1,101	2,060	1,089
30-34	1,542	563	1,533	528	1,379	578	1,327	556	1,173	560	1,130	507
35-39	944	320	969	292	924	357	891	328	758	319	844	342
40-49	1,212	400	1,262	356	1,042	379	1,040	384	801	328	874	324
50+	891	244	966	248	789	227	676	210	608	189	583	185

	2014-15		2015-16		2016-17		2017-18		2018-19		2019-20	
ETHNICITY	Headcount	FTES	Headcount	FTES	Headcount	FTES	Headcount	FTES	Headcount	FTES	Headcount	FTES
Asian	585	277	582	275	512	264	469	214	386	186	378	187
Black	617	340	673	359	583	326	555	278	459	259	491	278
Filipino	477	320	473	292	483	309	462	269	450	305	488	259
Hispanic	7,959	4,698	8,196	4,670	8,206	4,873	7,475	4,482	6,604	4,071	7,536	4,047
NativeAm	270	144	263	133	307	144	348	167	358	198	360	190
Other	5	1	2	0	4	1	5	2	2	1	2	1
PacIsl	122	59	97	50	119	62	141	62	131	74	167	81
White	6,671	3,050	6,728	2,862	7,016	3,146	7,819	3,541	7,236	3,751	7,129	3,648

	2014-15		2015-16		2016-17		2017-18		2018-19		2019-20	
	Headcount	FTES	Headcount	FTES	Headcount	FTES	Headcount	FTES	Headcount	FTES	Headcount	FTES
Female	8,253	4,714	8,360	4,479	8,768	4,922	8,937	4,913	8,454	4,877	8,777	4,837
Male	8,445	4,174	8,643	4,159	8,340	4,181	8,126	4,049	7,027	3,916	7,521	3,767
Unknown	3	2	3	2	109	23	181	51	121	52	228	88

	2014-15		2015-16		2016-17		2017-18		2018-19		2019-20	
	Headcount	FTES	Headcount	FTES	Headcount	FTES	Headcount	FTES	Headcount	FTES	Headcount	FTES
First Time	2,904	1,176	2,920	1,185	2,777	1,194	2,562	1,089	2,666	1,240	2,620	1,189
First Time Transfer	2,408	598	2,634	616	2,111	541	2,352	656	1,766	564	1,540	447
Continuing	10,402	6,334	10,178	5,991	10,502	6,487	9,986	6,305	9,576	6,120	9,325	5,977
Returning	3,039	672	3,196	675	2,277	551	2,382	539	1,964	496	2,231	504
Special Admit	560	107	935	173	2,260	353	2,578	424	2,281	425	3,521	574
Unknown	13	3	6	2	4	0	1	0	1	0	2	0
Grand Total	**16,700**	**8,890**	**17,004**	**8,641**	**17,217**	**9,126**	**17,235**	**9,014**	**15,597**	**8,845**	**16,523**	**8,691**

3 Program Equity Outcomes MATH

Percentage Point Gap (PPG)-compare a group outcome to the overall outcome, if group is 3% less or lower than overall then group is disproportionately impacted.
PPG Mod-same as PPG except overall outcome is modified to NOT include group outcome.
PPG Impact-amount of students needed to have a positive outcome in order to have the group reach equity.

Equity Outcomes only work for a single subject. Contact IE to get data for multiple subjects

	Academic Year 2019-20									
	Headcount	Enrollment	EW count	FTES	Retention %	PPG Retention Mod	PPG Retention Impact	Success %	PPG Success Mod	PPG Success Impact
Under 20	1,968	2,769	315	438	78.9%	-2.0%	57	57.9%	-8.0%	223
20-24	1,440	1,941	220	309	80.2%	0.4%		63.7%	2.4%	
25-29	422	532	58	84	80.2%	0.3%		64.6%	2.7%	
30-34	193	268	27	41	82.6%	2.8%		71.0%	9.3%	
35-39	116	161	21	25	86.4%	6.7%		77.9%	16.2%	
40-49	127	169	30	27	81.3%	1.4%		72.7%	10.8%	
50+	52	71	18	11	86.8%	6.9%		75.5%	13.5%	
Grand Total	**4,233**	**5,911**	**689**	**936**	**79.9%**			**62.1%**		

3 Program Equity Outcomes MATH

Percentage Point Gap (PPG)-compare a group outcome to the overall outcome, if group is 3% less or lower than overall then group is disproportionately impacted.

PPG Mod-same as PPG except overall outcome is modified to NOT include group outcome.

PPG Impact-amount of students needed to have a positive outcome in order to have the group reach equity.

Equity Outcomes only work for a single subject. Contact IE to get data for multiple subjects

	Academic Year 2019-20									
	Headcount	Enrollment	EW count	FTES	Retention %	PPG Retention Mod	PPG Retention Impact	Success %	PPG Success Mod	PPG Success Impact
Asian	92	136	15	22	84.3%	4.5%		66.1%	4.1%	
Black	111	153	25	25	73.4%	-6.7%	11	53.9%	-8.4%	13
Filipino	116	167	16	27	84.8%	5.0%		65.6%	3.5%	
Hispanic	2,063	2,923	377	462	78.5%	-2.8%	83	59.2%	-5.7%	168
Native Am	94	138	26	21	74.1%	-6.0%	9	58.9%	-3.3%	5
Pac Isl	47	63	13	10	68.0%	-12.0%	8	46.0%	-16.3%	11
White	1,631	2,223	205	351	82.4%	4.0%		66.7%	7.4%	
Unknown	82	108	12	18	76.0%	-4.0%	5	57.3%	-4.9%	6
Grand Total	**4,233**	**5,911**	**689**	**936**	**79.9%**			**62.1%**		

3 Program Equity Outcomes MATH

Percentage Point Gap (PPG)-compare a group outcome to the overall outcome, if group is 3% less or lower than overall then group is disproportionately impacted.
PPG Mod-same as PPG except overall outcome is modified to NOT include group outcome.
PPG Impact-amount of students needed to have a positive outcome in order to have the group reach equity.

Equity Outcomes only work for a single subject. Contact IE to get data for multiple subjects

	Academic Year 2019-20									
	Headcount	Enrollment	EW count	FTES	Retention %	PPG Retention Mod	PPG Retention Impact	Success %	PPG Success Mod	PPG Success Impact
Female	2,216	2,998	306	467	79.7%	-0.5%	16	63.6%	3.0%	
Male	1,975	2,854	374	459	80.5%	1.1%		61.0%	-2.2%	63
Unknown	42	59	9	10	64.0%	-16.1%	10	40.0%	-22.3%	14
Grand Total	**4,233**	**5,911**	**689**	**936**	**79.9%**			**62.1%**		

3 Program Equity Outcomes MATH

Percentage Point Gap (PPG)-compare a group outcome to the overall outcome, if group is 3% less or lower than overall then group is disproportionately impacted.

PPG Mod-same as PPG except overall outcome is modified to NOT include group outcome.

PPG Impact-amount of students needed to have a positive outcome in order to have the group reach equity.

Equity Outcomes only work for a single subject. Contact IE to get data for multiple subjects

	Academic Year									
	2019-20									
	Headcount	Enrollment	EW count	FTES	Retention %	PPG Retention Mod	PPG Retention Impact	Success %	PPG Success Mod	PPG Success Impact
First Time	983	1,173	20	182	73.7%	-8.0%	94	49.0%	-16.8%	198
First Time Tran..	175	187	20	30	86.2%	6.5%		70.1%	8.2%	
Continuing	3,153	4,200	627	666	81.3%	4.3%		65.4%	10.4%	
Returning	219	239	22	38	78.3%	-1.7%	4	60.8%	-1.3%	4
Special Admit	99	112	0	20	93.8%	14.1%		83.0%	21.4%	
Grand Total	**4,233**	**5,911**	**689**	**936**	**79.9%**			**62.1%**		

3 Allan Hancock College Credit Equity Outcomes

Equity:
Percentage Point Gap (PPG)-compare a group outcome to the overall outcome, if group is 3% less or lower than overall then group is disproportionately impacted.
PPG Mod-same as PPG except overall outcome is modified to NOT include group outcome.
PPG Impact-amount of students needed to have a positive outcome in order to have the group reach equity

	Academic Year 2019-20						
	Headcount	Enrollment	EW count	FTES	Retention %	PPG AHC Retention Mod	PPG AHC Retention Impact
Under 20	7,482	28,282	2,460	3,583	90.4%	0.9%	
20-24	4,867	20,725	1,537	2,853	88.8%	-1.6%	330
25-29	2,060	7,055	437	1,089	89.4%	-0.5%	38
30-34	1,130	3,508	196	507	91.3%	1.5%	
35-39	844	2,403	154	342	90.2%	0.4%	
40-49	874	2,442	235	324	91.1%	1.3%	
50+	583	1,566	182	185	91.5%	1.7%	
Grand Total	17,034	65,981	5,201	8,881	89.9%		

3 Allan Hancock College Credit Equity Outcomes

Equity:
Percentage Point Gap (PPG)-compare a group outcome to the overall outcome, if group is 3% less or lower than overall then group is disproportionately impacted.
PPG Mod-same as PPG except overall outcome is modified to NOT include group outcome.
PPG Impact-amount of students needed to have a positive outcome in order to have the group reach equity

	Academic Year 2019-20						
	Headcount	Enrollment	EW count	FTES	Success %	PPG AHC Success Mod	PPG AHC Success Impact
Under 20	7,482	28,282	2,460	3,583	76.0%	-3.6%	1,024
20-24	4,867	20,725	1,537	2,853	77.6%	-0.7%	144
25-29	2,060	7,055	437	1,089	79.6%	1.7%	
30-34	1,130	3,508	196	507	83.5%	5.8%	
35-39	844	2,403	154	342	82.9%	5.0%	
40-49	874	2,442	235	324	85.6%	7.8%	
50+	583	1,566	182	185	83.3%	5.3%	
Grand Total	**17,034**	**65,981**	**5,201**	**8,881**	**78.1%**		

3 Allan Hancock College Credit Equity Outcomes

Equity:
Percentage Point Gap (PPG)-compare a group outcome to the overall outcome, if group is 3% less or lower than overall then group is disproportionately impacted.
PPG Mod-same as PPG except overall outcome is modified to NOT include group outcome.
PPG Impact-amount of students needed to have a positive outcome in order to have the group reach equity

	Academic Year						
	2019-20						
	Headcount	Enrollment	EW count	FTES	Retention %	PPG AHC Retention Mod	PPG AHC Retention Impact
Asian	378	1,366	84	187	90.2%	0.3%	
Black	491	1,928	176	278	88.8%	-1.1%	22
Filipino	488	1,813	134	259	91.2%	1.4%	
Hispanic	7,536	30,439	2,709	4,047	88.7%	-2.2%	671
Native Am	360	1,475	151	190	85.9%	-4.1%	60
Other	2	7	0	1	100.0%		
Pac Isl	167	663	73	81	88.6%	-1.2%	8
White	7,129	26,825	1,707	3,648	91.3%	2.5%	
Unknown	516	1,465	167	190	90.8%	0.9%	
Grand Total	**17,034**	**65,981**	**5,201**	**8,881**	**89.9%**		

3 Allan Hancock College Credit Equity Outcomes

Equity:
Percentage Point Gap (PPG)-compare a group outcome to the overall outcome, if group is 3% less or lower than overall then group is disproportionately impacted.
PPG Mod-same as PPG except overall outcome is modified to NOT include group outcome.
PPG Impact-amount of students needed to have a positive outcome in order to have the group reach equity

	Academic Year						
	2019-20						
	Headcount	Enrollment	EW count	FTES	Success %	PPG AHC Success Mod	PPG AHC Success Impact
Asian	378	1,366	84	187	79.5%	1.4%	
Black	491	1,928	176	278	75.2%	-3.0%	58
Filipino	488	1,813	134	259	80.0%	2.0%	
Hispanic	7,536	30,439	2,709	4,047	75.2%	-5.4%	1,636
Native Am	360	1,475	151	190	73.9%	-4.3%	64
Other	2	7	0	1	100.0%		
Pac Isl	167	663	73	81	72.4%	-5.8%	38
White	7,129	26,825	1,707	3,648	81.7%	6.2%	
Unknown	516	1,465	167	190	76.9%	-1.2%	18
Grand Total	**17,034**	**65,981**	**5,201**	**8,881**	**78.1%**		

3 Allan Hancock College Credit Equity Outcomes

Equity:
Percentage Point Gap (PPG)-compare a group outcome to the overall outcome, if group is 3% less or lower than overall then group is disproportionately impacted.
PPG Mod-same as PPG except overall outcome is modified to NOT include group outcome.
PPG Impact-amount of students needed to have a positive outcome in order to have the group reach equity

	Academic Year						
	2019-20						
	Headcount	Enrollment	EW count	FTES	Retention %	PPG AHC Retention Mod	PPG AHC Retention Impact
Female	8,967	36,046	2,443	4,909	89.4%	-0.9%	337
Male	7,769	29,148	2,626	3,869	90.4%	0.9%	
Unknown	302	787	132	103	90.5%	0.7%	
Grand Total	**17,034**	**65,981**	**5,201**	**8,881**	**89.9%**		

3 Allan Hancock College Credit Equity Outcomes

Equity:
Percentage Point Gap (PPG)-compare a group outcome to the overall outcome, if group is 3% less or lower than overall then group is disproportionately impacted.
PPG Mod-same as PPG except overall outcome is modified to NOT include group outcome.
PPG Impact-amount of students needed to have a positive outcome in order to have the group reach equity

	Academic Year 2019-20						
	Headcount	Enrollment	EW count	FTES	Success %	PPG AHC Success Mod	PPG AHC Success Impact
Female	8,967	36,046	2,443	4,909	78.5%	0.8%	
Male	7,769	29,148	2,626	3,869	77.7%	-0.7%	193
Unknown	302	787	132	103	74.2%	-3.9%	31
Grand Total	**17,034**	**65,981**	**5,201**	**8,881**	**78.1%**		

3 Allan Hancock College Credit Equity Outcomes

Equity:

Percentage Point Gap (PPG)-compare a group outcome to the overall outcome, if group is 3% less or lower than overall then group is disproportionately impacted.

PPG Mod-same as PPG except overall outcome is modified to NOT include group outcome.

PPG Impact-amount of students needed to have a positive outcome in order to have the group reach equity

	Academic Year 2019-20						
	Headcount	Enrollment	EW count	FTES	Retention %	PPG AHC Retention Mod	PPG AHC Retention Impact
First Time	2,748	9,927	213	1,241	87.4%	-2.9%	290
First Time Tran..	1,674	3,393	172	488	92.2%	2.5%	
Continuing	9,472	42,926	4,002	6,043	89.4%	-1.4%	581
Returning	2,235	4,167	302	504	88.1%	-1.9%	78
Special Admit	3,739	5,565	511	605	98.1%	9.0%	
Unknown	2	3	1	0	100.0%		
Grand Total	**17,034**	**65,981**	**5,201**	**8,881**	**89.9%**		

3 Allan Hancock College Credit Equity Outcomes

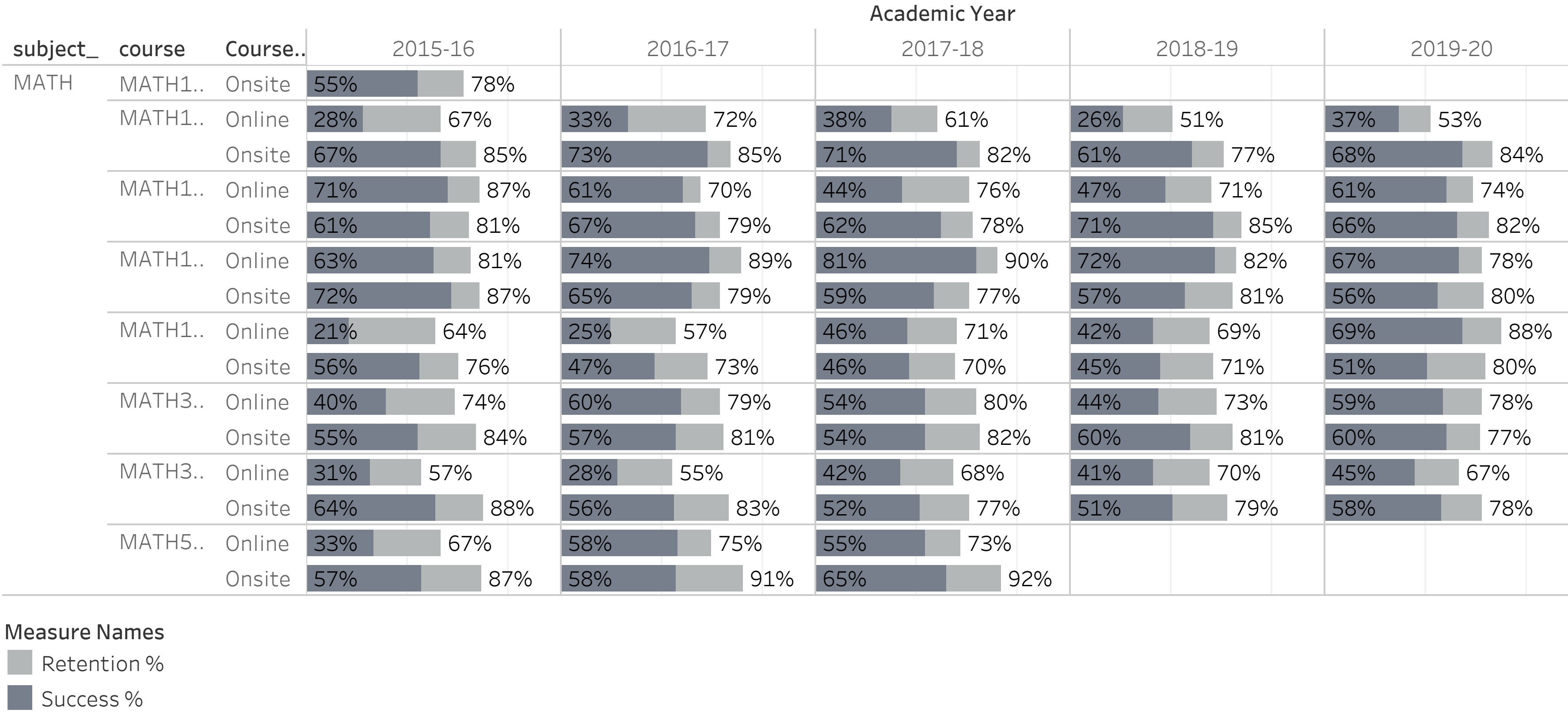
Equity:
Percentage Point Gap (PPG)-compare a group outcome to the overall outcome, if group is 3% less or lower than overall then group is disproportionately impacted.
PPG Mod-same as PPG except overall outcome is modified to NOT include group outcome.
PPG Impact-amount of students needed to have a positive outcome in order to have the group reach equity

	Academic Year 2019-20						
	Headcount	Enrollment	EW count	FTES	Success %	PPG AHC Success Mod	PPG AHC Success Impact
First Time	2,748	9,927	213	1,241	65.6%	-14.9%	1,481
First Time Tran..	1,674	3,393	172	488	81.6%	3.7%	
Continuing	9,472	42,926	4,002	6,043	79.4%	3.6%	
Returning	2,235	4,167	302	504	75.9%	-2.3%	96
Special Admit	3,739	5,565	511	605	91.7%	14.8%	
Unknown	2	3	1	0	100.0%		
Grand Total	**17,034**	**65,981**	**5,201**	**8,881**	**78.1%**		

4 Online / Onsite course comparison MATH
All online courses and matching onsite courses

			Academic Year																			
			2015-16				2016-17				2017-18				2018-19				2019-20			
subject	course	Course Type	Hea..	Enr..	Sect..	FTES	Hea..	Enr..	Sect..	FTES	Hea..	Enr..	Sect..	FTES	Hea..	Enr..	Sect..	FTES	Hea..	Enr..	Sect..	FTES
MATH	MATH105	Onsite	65	69	2	9																
	MATH123	Online	111	113	3	15	109	117	3	15	105	105	3	14	136	140	4	18	148	152	5	20
		Onsite	977	1,019	31	178	1,079	1,123	34	193	1,081	1,132	33	193	1,181	1,227	35	211	1,559	1,625	46	286
	MATH131	Online	88	89	3	9	63	66	3	6	84	85	3	8	94	95	3	9	80	80	3	8
		Onsite	154	161	6	23	167	174	6	25	166	177	6	25	161	165	6	24	165	173	6	26
	MATH141	Online	27	27	1	4	91	104	3	19	112	113	3	22	107	108	3	21	114	115	3	22
		Onsite	357	373	11	63	305	328	10	68	256	271	10	56	267	285	10	59	331	364	12	76
	MATH181	Online	14	14	1	2	44	44	2	7	91	96	3	12	104	108	4	14	100	102	3	13
		Onsite	304	324	9	55	302	342	10	58	270	312	9	53	290	325	9	56	319	361	10	62
	MATH311	Online	83	85	3	11	126	128	3	17	128	133	3	17	119	122	3	16	91	93	3	12
		Onsite	825	877	29	129	648	687	24	101	570	606	21	88	483	495	16	72	203	212	7	31
	MATH331	Online	134	144	5	19	151	156	5	20	155	164	5	21	137	139	4	18	140	143	5	19
		Onsite	1,512	1,592	53	274	1,258	1,355	47	235	1,079	1,151	37	198	791	833	29	142	631	659	24	114
	MATH521	Online	6	6	1	1	52	55	2	9	50	51	2	8								
		Onsite	91	94	4	20	64	66	4	15	75	77	3	17								

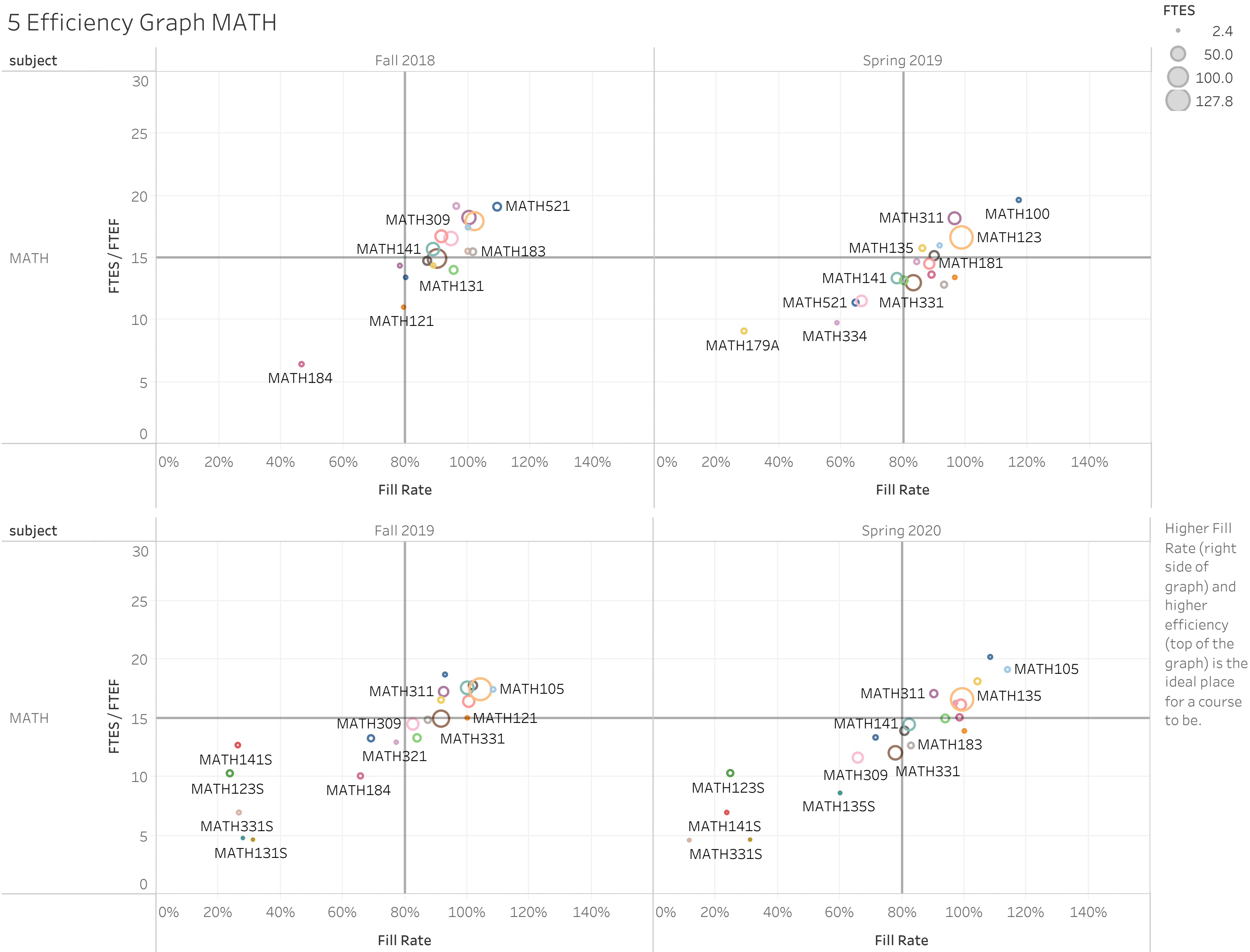
4 Online / Onsite Retention & Success course comparison MATH
All online courses and matching onsite courses



4 Online / Onsite credit course comparison Allan Hancock College

Course Type		Academic Year 2015-16	2016-17	2017-18	2018-19	2019-20
Online	Headcount	7,580	7,006	7,152	6,744	7,040
	Enrollment	15,710	15,695	15,548	15,081	15,957
	Sections	509	517	501	457	487
	Retention %	83%	83%	84%	85%	87%
	Success %	64%	66%	67%	68%	73%
	FTES	1,496	1,524	1,523	1,490	1,569
Onsite	Headcount	13,623	14,458	14,466	13,515	14,715
	Enrollment	50,973	51,353	49,698	48,165	50,024
	Sections	2,284	2,279	2,231	2,164	2,278
	Retention %	90%	90%	89%	89%	91%
	Success %	75%	76%	76%	75%	80%
	FTES	7,145	7,775	7,511	7,403	7,313
Grand Total	Headcount	**17,009**	**17,251**	**17,276**	**15,700**	**17,034**
	Enrollment	**66,683**	**67,048**	**65,246**	**63,246**	**65,981**
	Sections	**2,793**	**2,796**	**2,732**	**2,621**	**2,765**
	Retention %	**88%**	**88%**	**88%**	**88%**	**90%**
	Success %	**72%**	**74%**	**74%**	**73%**	**78%**
	FTES	**8,642**	**9,298**	**9,034**	**8,893**	**8,881**

5 Efficiency Graph MATH



Higher Fill Rate (right side of graph) and higher efficiency (top of the graph) is the ideal place for a course to be.

5 Efficiency Table MATH

Academic Year	Term Code_	course_	FTES	FTEF+	FTES / FTEF	Enrollment	Maximum Enrollment	MaxEnroll..	Fill Rate
2018-19	Sum 2018	MATH123	19	1.422	13.2	120	170	43	71%
		MATH131	3	0.306	8.6	27	36	36	75%
		MATH141	13	0.888	15.1	69	76	38	91%
		MATH181	8	0.756	10.3	60	72	36	83%
		MATH309	4	0.333	11.0	22	35	35	63%
		MATH311	7	0.630	11.4	55	108	36	51%
		MATH321	3	0.030	110.8	33	35	35	94%
		MATH331	14	1.078	12.5	90	118	39	76%
		Total	**70**	**5.443**	**12.9**	**476**	**650**	**38**	**73%**
	Fall 2018	MATH100	3	0.216	13.4	28	35	35	80%
		MATH105	5	0.267	17.5	36	36	36	100%
		MATH121	2	0.216	11.0	23	29	29	79%
		MATH123	82	4.572	18.0	487	477	37	102%
		MATH131	16	1.110	14.0	124	130	33	95%
		MATH135	4	0.288	14.4	32	36	36	89%
		MATH141	39	2.496	15.7	190	214	36	89%
		MATH181	36	2.133	16.7	214	234	39	91%
		MATH182	16	1.080	14.8	93	107	36	87%
		MATH183	11	0.720	15.5	65	64	32	102%
		MATH184	5	0.720	6.4	27	58	29	47%
		MATH309	46	2.772	16.6	260	275	34	95%
		MATH311	45	2.466	18.3	315	314	35	100%
		MATH321	8	0.416	19.2	77	80	40	96%
		MATH331	88	5.877	15.0	525	583	34	90%
		MATH333	4	0.259	14.4	25	32	32	78%
		MATH521	15	0.800	19.1	70	64	32	109%
		MATH531	6	0.400	15.5	60	60	30	100%
		Total	**430**	**26.808**	**16.1**	**2,651**	**2,828**	**35**	**94%**
	Spring 2019	MATH100	4	0.216	19.7	41	35	35	117%
		MATH105	4	0.267	16.0	33	36	36	92%
		MATH121	3	0.216	13.4	28	29	29	97%

5 Efficiency Table MATH

Academic Year	Term Code_	course_	FTES	FTEF+	FTES / FTEF	Enrollment	Maximum Enrollment	MaxEnroll..	Fill Rate
2018-19	Spring 2019	MATH123	128	7.677	16.7	760	770	35	99%
		MATH131	15	1.109	13.2	109	136	34	80%
		MATH135	8	0.534	15.8	62	72	36	86%
		MATH141	28	2.064	13.4	134	172	34	78%
		MATH179A	6	0.698	9.1	89	310	34	29%
		MATH181	26	1.800	14.5	159	180	36	88%
		MATH182	21	1.413	15.2	125	139	35	90%
		MATH183	9	0.720	12.8	54	58	29	93%
		MATH184	10	0.720	13.7	57	64	32	89%
		MATH309	28	2.439	11.5	159	239	34	67%
		MATH311	36	1.953	18.2	247	256	37	96%
		MATH321	6	0.416	14.7	59	70	35	84%
		MATH331	59	4.518	13.0	357	429	33	83%
		MATH334	3	0.259	9.8	17	29	29	59%
		MATH521	9	0.800	11.4	42	65	33	65%
		Total	**403**	**27.819**	**14.5**	**2,532**	**3,089**	**34**	**82%**
	Total		**904**	**60.070**	**15.0**	**5,659**	**6,567**	**35**	**86%**
2019-20	Sum 2019	MATH123	32	1.778	18.2	163	180	36	91%
		MATH131	2	0.306	7.0	22	36	36	61%
		MATH141	17	1.299	13.3	89	106	35	84%
		MATH179A	1	0.133	4.1	9	36	36	25%
		MATH181	11	0.728	14.7	72	71	36	101%
		MATH309	3	0.378	7.9	18	35	35	51%
		MATH311	4	0.589	7.5	34	65	33	52%
		MATH331	9	1.078	8.7	62	104	35	60%
		Total	**80**	**6.289**	**12.7**	**469**	**633**	**35**	**74%**
	Fall 2019	MATH100	4	0.216	18.7	39	42	42	93%
		MATH105	6	0.333	17.4	39	36	36	108%
		MATH121	3	0.200	15.0	29	29	29	100%
		MATH123	134	7.650	17.5	791	759	35	104%
		MATH123S	10	0.986	10.3	150	636	35	24%

5 Efficiency Table MATH

Academic Year	Term Code_	course_	FTES	FTEF+	FTES / FTEF	Enrollment	Maximum Enrollment	MaxEnroll..	Fill Rate
2019-20	Fall 2019	MATH131	15	1.110	13.3	109	130	33	84%
		MATH131S	1	0.200	4.7	9	29	29	31%
		MATH135	9	0.534	16.6	65	71	36	92%
		MATH135S	1	0.216	4.8	10	36	36	28%
		MATH141	44	2.528	17.6	214	214	36	100%
		MATH141S	5	0.416	12.7	51	195	33	26%
		MATH181	35	2.133	16.4	213	212	35	100%
		MATH182	19	1.053	17.8	110	108	36	102%
		MATH183	11	0.720	14.9	62	71	36	87%
		MATH184	7	0.720	10.1	42	64	32	66%
		MATH309	35	2.412	14.5	198	240	34	83%
		MATH311	24	1.398	17.3	170	184	37	92%
		MATH321	3	0.216	13.0	27	35	35	77%
		MATH331	73	4.851	15.0	435	475	34	92%
		MATH331S	4	0.576	7.0	62	234	29	26%
		MATH521	11	0.800	13.3	49	71	36	69%
		Total	**453**	**29.268**	**15.5**	**2,874**	**3,871**	**34**	**74%**
	Spring 2020	MATH100	4	0.200	20.2	39	36	36	108%
		MATH105	6	0.333	19.1	41	36	36	114%
		MATH121	3	0.216	13.9	29	29	29	100%
		MATH123	139	8.397	16.6	823	829	35	99%
		MATH123S	10	0.986	10.3	148	600	30	25%
		MATH131	17	1.110	15.0	122	130	33	94%
		MATH131S	1	0.200	4.7	9	29	29	31%
		MATH135	10	0.555	18.1	74	71	36	104%
		MATH135S	2	0.216	8.6	18	30	30	60%
		MATH141	37	2.528	14.5	176	214	36	82%
		MATH141S	3	0.416	7.0	28	119	30	24%
		MATH181	29	1.800	16.1	178	180	36	99%
		MATH182	19	1.386	13.9	113	140	35	81%
		MATH183	9	0.720	12.7	53	64	32	83%

5 Efficiency Table MATH

Academic Year	Term Code_	course_	FTES	FTEF+	FTES / FTEF	Enrollment	Maximum Enrollment	MaxEnroll..	Fill Rate
2019-20	Spring 2020	MATH184	11	0.720	15.1	63	64	32	98%
		MATH309	28	2.412	11.6	159	242	35	66%
		MATH311	14	0.843	17.1	101	112	37	90%
		MATH321	4	0.216	16.3	34	35	35	97%
		MATH331	50	4.158	12.0	305	392	33	78%
		MATH331S	2	0.421	4.6	30	262	29	11%
		MATH521	5	0.400	13.4	25	35	35	71%
		Total	404	28.233	14.3	2,568	3,649	33	70%
	Total		936	63.790	14.7	5,911	8,153	34	73%
Grand Total			1,840	123.860	14.9	11,570	14,720	34	79%

6 Degree/Certificate Mathematics & Mathematics for Transfer

	Program Desc	Degree	Degree Major	Degree Desc (group)	Academic Year Graduation Desc 2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
Unduplicated	Mathematics	AA	Math: Physics Emphasis	Associate in Arts (A)	24	19	16	24	17	24
			Mathematics: Comp Sci Emp..	Associate in Arts (A)	11	7	13	11	7	7
		AS-T	Mathematics for Transfer	Associate in Science - Transfe	28	9	11	18	25	30
	Mathematics f..	AS-T	Mathematics for Transfer	Associate in Science - Transfe						2
Duplicated	Mathematics	AA	Math: Physics Emphasis	Associate in Arts (A)	24	19	16	24	17	24
			Mathematics: Comp Sci Emp..	Associate in Arts (A)	11	7	13	11	7	7
		AS-T	Mathematics for Transfer	Associate in Science - Transfe	28	9	11	18	25	30
	Mathematics f..	AS-T	Mathematics for Transfer	Associate in Science - Transfe						2
Unduplicated	Total				**42**	**26**	**29**	**39**	**36**	**49**
Duplicated	Total				**63**	**35**	**40**	**53**	**49**	**63**

6 Majors Mathematics, Mathematics for Transfer, Mathematics for Transfer UC - Headcount

	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Computer Science	4		3			
Math: Physics Emphasis	24	23	15	37	34	22
Mathematics for Transfer	71	95	110	122	99	141
Mathematics: Comp Sci Emp..	39	41	27	32	40	20
Grand Total	**136**	**159**	**154**	**190**	**172**	**180**

6 Mathematics & Mathematics for Transfer Award|Major Match

--If a student has the same program of study and major as the award earned they will be a 'Major Match'. If not they will be a 'Major Split'.

--Headcount & Percentages are the students who are a major match/split for a specific award.

--Data is sorted by program/major of the earned award.

					Academic Year Graduation Desc											
					2014-2015		2015-2016		2016-2017		2017-2018		2018-2019		2019-2020	
Program..	Degree	Degree Major	Degree Desc (group)	Major ..	HC	%	HC	%	HC	%	HC	%	HC	%	HC	%
Mathem..	AA	Math: Physics Emphasis	Associate in Arts (A)	Match	2	8%					1	4%	1	6%	1	4%
				Split	22	92%	19	100%	16	100%	23	96%	16	94%	23	96%
		Mathematics: Comp Sci Emphasis	Associate in Arts (A)	Match			1	14%	1	8%	1	9%			1	14%
				Split	11	100%	6	86%	12	92%	10	91%	7	100%	6	86%
	AS-T	Mathematics for Transfer	Associate in Science - Transfe	Match	3	11%	1	11%	3	27%	2	11%	4	16%	6	20%
				Split	25	89%	8	89%	8	73%	16	89%	21	84%	24	80%
	Total				42		26		29		39		36		49	
Mathematics for T..	AS-T	Mathematics for Transfer	Associate in Science - Tra..	Split											2	100%
	Total														2	100%

6 Degree/Certificate Allan Hancock College

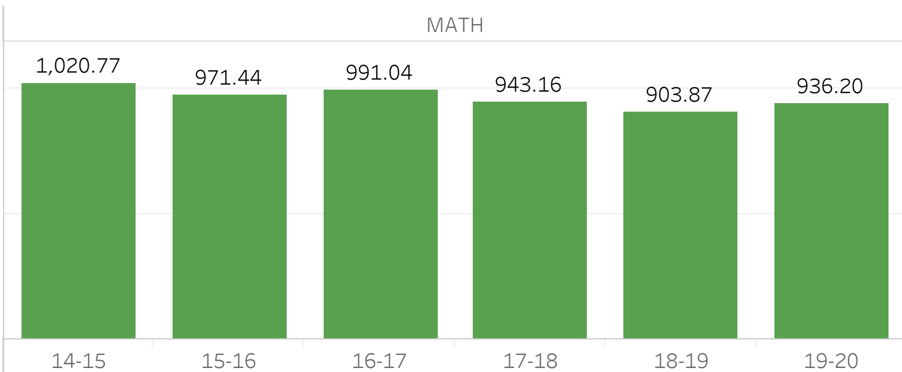
		Academic Year Graduation Desc					
	Degree Desc (group)	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
Unduplicated	6 to fewer than 18 units (E)	235	253	318	303	277	246
	12 to fewer than 18 units (B)		1		11	11	16
	18 to fewer than 30 units (L)	172	149	180	146	168	113
	30 to fewer than 60 units (T)	555	511	596	634	697	674
	60+ units (F)	37	38	34	33	38	28
	Associate in Arts - Transfer	42	92	126	159	163	218
	Associate in Arts (A)	571	494	523	493	589	880
	Associate in Science - Transfe	90	95	128	126	191	226
	Associate in Science (S)	299	277	319	313	321	304
	NC Cert 48 to <96 hrs (H)	29	3	10	22	21	8
	NC Cert 192 to <288 hrs (K)	5	7	5	1	6	13
	NC Cert 288 to <480 hrs (P)	4	2	27	46	38	31
	NC Cert 480 to <960 hrs (Q)				2	9	29
	Other Credit Award <6 units(O)	42	129	124	126	94	151
Duplicated	6 to fewer than 18 units (E)	240	261	365	330	299	267
	12 to fewer than 18 units (B)		1		11	11	16
	18 to fewer than 30 units (L)	184	157	188	166	182	122
	30 to fewer than 60 units (T)	575	527	624	671	738	700
	60+ units (F)	37	38	34	33	38	28
	Associate in Arts - Transfer	42	95	130	163	164	229
	Associate in Arts (A)	795	709	726	737	814	1,434
	Associate in Science - Transfe	98	99	133	138	207	235
	Associate in Science (S)	318	307	347	345	350	335
	NC Cert 48 to <96 hrs (H)	29	3	10	23	21	8
	NC Cert 192 to <288 hrs (K)	5	7	5	1	6	13
	NC Cert 288 to <480 hrs (P)	4	2	34	46	39	32
	NC Cert 480 to <960 hrs (Q)				2	9	29
	Other Credit Award <6 units(O)	63	142	136	150	105	161
Unduplicated	Total	**1,517**	**1,491**	**1,703**	**1,673**	**1,802**	**1,923**
Duplicated	Total	**2,390**	**2,348**	**2,732**	**2,816**	**2,983**	**3,609**

7 FTEF+Overload, FTES & Efficiency - MATH

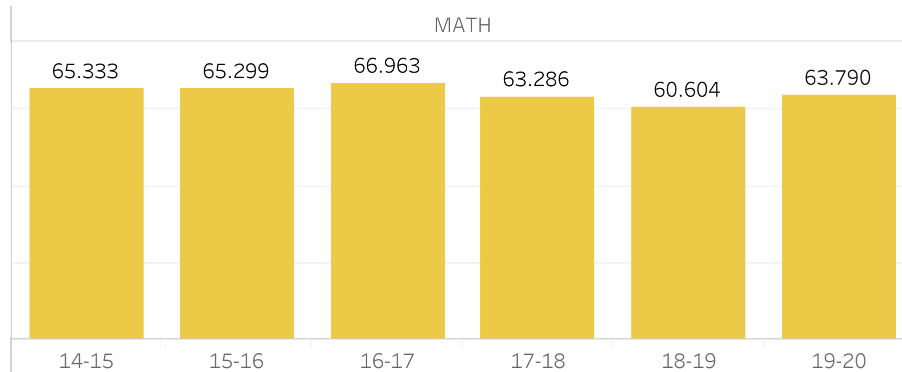
Academic Year

2014-2015			2015-2016			2016-2017			2017-2018			2018-2019			2019-2020		
FTEF+	FTES	FTES / FTEF	FTEF+	FTES	FTES / FTEF	FTEF+	FTES	FTES / FTEF	FTEF+	FTES	FTES / FTEF	FTEF+	FTES	FTES / FTEF	FTEF+	FTES	FTES / FTEF
65.333	1,020.77	16	65.299	971.44	15	66.963	991.04	15	63.286	943.16	15	60.604	903.87	15	63.790	936.20	15

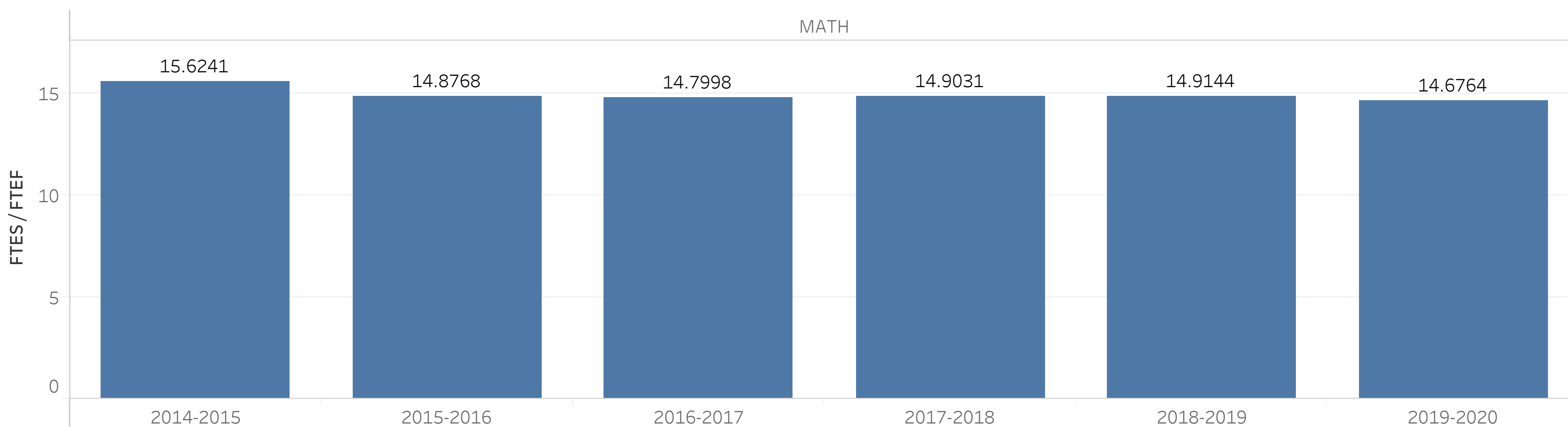
FTES



FTEF



FTEF/ FTES



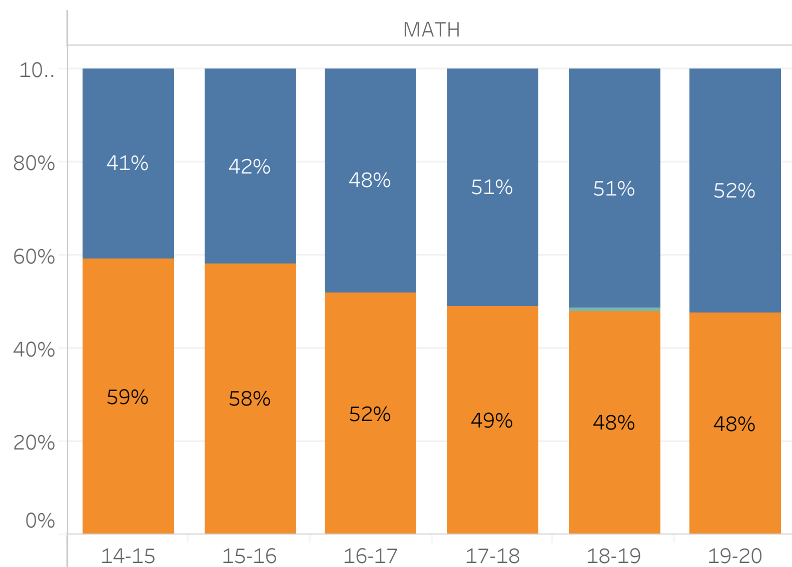
7 FTEF, overload, sections by faculty type MATH

SUBJECT	Faculty Type	2014-2015 FTEF	2014-2015 Overload	2014-2015 Faculty	2014-2015 Sections	2015-2016 FTEF	2015-2016 Overload	2015-2016 Faculty	2015-2016 Sections	2016-2017 FTEF	2016-2017 Overload	2016-2017 Faculty	2016-2017 Sections
MATH	Instructional - FT	24.183	6.055	13.0	96.0	24.092	7.870	13.0	98.0	26.986	10.862	15.0	112.0
	Instructional - PT	35.095	0.000	32.0	114.0	33.337	0.000	33.0	108.0	29.115	0.000	33.0	95.0
Grand Total		59.278	6.055	45.0	210.0	57.429	7.870	46.0	206.0	56.101	10.862	47.0	207.0

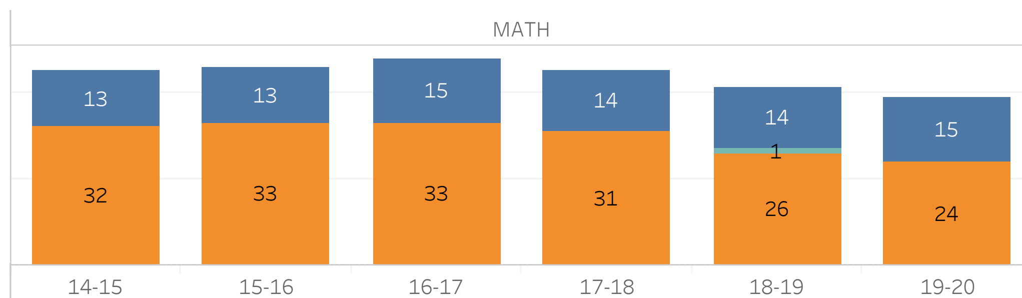
SUBJECT	Faculty Type	2017-2018 FTEF	2017-2018 Overload	2017-2018 Faculty	2017-2018 Sections	2018-2019 FTEF	2018-2019 Overload	2018-2019 Faculty	2018-2019 Sections	2019-2020 FTEF	2019-2020 Overload	2019-2020 Faculty	2019-2020 Sections
MATH	Instructional - FT	26.7	10.8	14.0	111.0	25.8	10.2	14.0	108.0	28.1	10.0	15.0	148.0
	Instructional - NC					0.3	0.0	1.0	3.0				
	Instructional - PT	25.8	0.0	31.0	84.0	24.3	0.0	26.0	79.0	25.7	0.0	24.0	98.0
Grand Total		52.5	10.8	45.0	195.0	50.4	10.2	40.0	190.0	53.8	10.0	38.0	246.0

Faculty Type
- Instructional - FT
- Instructional - NC
- Instructional - PT

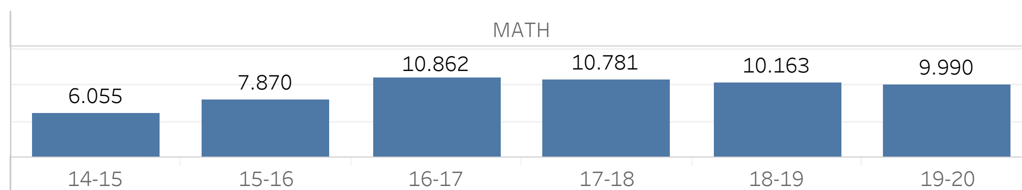
%FTEF by Faculty Type



Faculty count by type



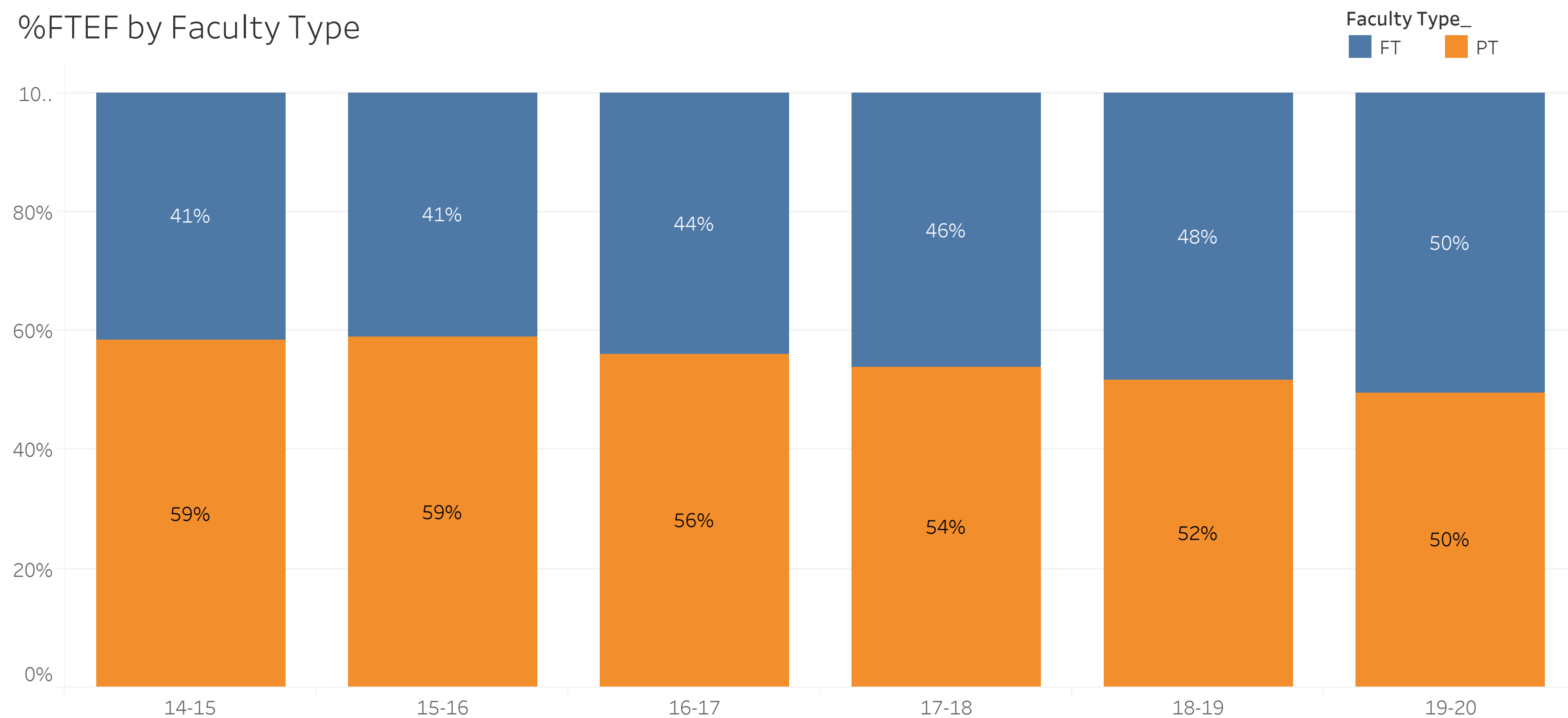
Overload



7 FTEF+Overload by Faculty Type Allan Hancock College

Instruction Type	Faculty Type	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
		Academic Year					
Instructional	Instructional - FT	277.160	288.448	307.136	313.022	314.389	311.083
	Instructional - PT	358.454	379.747	356.486	332.909	314.331	298.089
	Total	**635.614**	**668.195**	**663.622**	**645.931**	**628.720**	**609.172**
NonInstructional	NonInstructional - FT	73.988	70.677	70.965	74.347	77.457	94.311
	NonInstructional - PT	34.646	35.110	33.486	35.313	29.225	25.802
	Total	**108.634**	**105.787**	**104.451**	**109.660**	**106.682**	**120.113**
Grand Total		**744.248**	**773.982**	**768.073**	**755.591**	**735.402**	**729.285**

%FTEF by Faculty Type



Appendix A: Program/Course Demographics by Outcome MATH

		Academic Year											
		2017-18				2018-19				2019-20			
		Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %
MATH100	Under 20	7	0.7	86%	57%	19	2.0	89%	63%	30	3.1	93%	72%
	20-24	18	2.0	84%	74%	33	3.5	91%	65%	32	3.3	83%	63%
	25-29	6	0.7	100%	86%	10	1.1	91%	64%	12	1.2	83%	67%
	30-34	1	0.1	100%	100%	1	0.1	100%	0%	2	0.2	100%	100%
	35-39	1	0.1	0%	0%	1	0.1	100%	100%				
	40-49	4	0.4	75%	75%	1	0.1	0%	0%	2	0.2	100%	100%
	50+	2	0.2	50%	50%	2	0.2	50%	50%				
MATH105	Under 20	19	2.5	79%	68%	36	4.7	94%	81%	35	5.3	91%	74%
	20-24	39	6.1	87%	51%	24	3.1	96%	92%	35	5.4	100%	97%
	25-29	4	0.5	50%	25%	6	0.8	100%	83%	4	0.6	100%	100%
	30-34	2	0.3	100%	100%	3	0.4	100%	100%	4	0.6	100%	100%
	35-39	2	0.4	67%	33%								
	40-49									2	0.3	100%	100%
MATH121	Under 20	20	2.2	90%	38%	19	2.0	58%	21%	18	1.9	93%	80%
	20-24	19	2.0	74%	47%	19	2.2	57%	29%	26	2.8	76%	60%
	25-29	6	0.6	67%	50%	6	0.7	57%	57%	4	0.5	50%	25%
	30-34	5	0.5	40%	20%					5	0.5	40%	40%
	35-39	1	0.1	100%	0%	2	0.2	50%	50%	1	0.1	100%	0%
	40-49	1	0.1	0%	0%	2	0.2	0%	0%	1	0.2	50%	0%
	50+	1	0.1	0%	0%								
MATH123	Under 20	534	92.9	83%	70%	610	107.9	73%	55%	791	142.4	83%	64%
	20-24	447	79.3	78%	64%	463	81.7	73%	57%	571	104.3	79%	65%
	25-29	107	18.0	83%	72%	100	17.0	77%	63%	140	24.7	79%	69%
	30-34	38	6.5	74%	72%	64	10.9	80%	67%	68	11.8	78%	69%
	35-39	20	3.2	80%	70%	29	5.0	74%	61%	40	7.1	88%	76%
	40-49	26	4.3	65%	58%	30	5.0	70%	50%	62	11.3	77%	72%
	50+	15	2.5	80%	73%	8	1.3	75%	63%	21	3.8	88%	63%
MATH12..	Under 20									171	11.9	72%	60%
	20-24									67	4.9	72%	67%
	25-29									16	1.2	67%	60%

Appendix A: Program/Course Demographics by Outcome MATH

		Academic Year											
		2017-18				2018-19				2019-20			
		Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %
MATH12..	30-34									14	0.9	92%	92%
	35-39									6	0.4	83%	83%
	40-49									10	0.7	89%	67%
	50+									5	0.3	100%	100%
MATH131	Under 20	98	12.9	80%	56%	119	15.9	85%	66%	100	14.4	73%	54%
	20-24	99	13.4	77%	54%	91	12.4	75%	56%	92	12.7	81%	70%
	25-29	32	4.0	70%	64%	20	2.6	77%	59%	22	2.8	90%	71%
	30-34	10	1.3	73%	45%	10	1.3	70%	70%	12	1.6	91%	73%
	35-39	5	0.6	80%	80%	2	0.2	100%	100%	7	0.8	57%	57%
	40-49	4	0.6	80%	60%	3	0.4	100%	100%	5	0.6	100%	80%
	50+									5	0.6	100%	100%
MATH13..	Under 20									7	0.7	83%	67%
	20-24									5	0.5	100%	67%
	25-29									1	0.1	100%	100%
	30-34									2	0.2	100%	0%
	35-39									1	0.1	100%	100%
	50+									2	0.2	100%	100%
MATH135	Under 20	22	3.0	91%	82%	37	5.1	89%	74%	43	6.1	80%	77%
	20-24	41	6.5	85%	68%	44	6.0	91%	76%	70	10.3	88%	75%
	25-29	8	1.1	100%	88%	7	0.9	86%	71%	10	1.4	100%	90%
	30-34	2	0.3	100%	100%	2	0.3	100%	100%	6	1.0	86%	71%
	35-39	1	0.1	100%	100%					1	0.1	100%	100%
	40-49					2	0.3	0%	0%				
MATH13..	Under 20									8	0.8	100%	100%
	20-24									14	1.6	87%	87%
	25-29									2	0.2	100%	100%
	30-34									2	0.2	100%	100%
	35-39									1	0.1	100%	100%
MATH141	Under 20	182	38.6	85%	70%	214	47.1	86%	60%	243	54.7	84%	61%
	20-24	118	25.8	77%	61%	118	25.9	77%	62%	131	30.2	77%	59%

Appendix A: Program/Course Demographics by Outcome MATH

		Academic Year											
		2017-18				2018-19				2019-20			
		Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %
MATH141	25-29	41	9.0	75%	57%	22	4.4	82%	82%	34	7.9	62%	41%
	30-34	13	2.6	85%	77%	9	1.8	56%	44%	16	3.5	82%	76%
	35-39	6	1.5	86%	71%	1	0.2	100%	0%	4	0.8	75%	25%
	40-49	2	0.4	50%	50%	3	0.6	67%	67%	4	0.8	50%	50%
	50+	2	0.4	50%	50%	1	0.2	0%	0%	2	0.4	0%	0%
MATH14..	Under 20									50	5.4	75%	63%
	20-24									17	1.8	86%	64%
	25-29									5	0.6	60%	40%
	30-34									3	0.3	67%	67%
	35-39									1	0.1	0%	0%
MATH17..	Under 20					35	2.5	63%	40%	1	0.1	100%	100%
	20-24					34	2.4	59%	53%	3	0.2	100%	100%
	25-29					5	0.4	40%	40%	2	0.1	100%	50%
	30-34					7	0.5	71%	71%				
	35-39					3	0.2	67%	67%				
	40-49					5	0.4	80%	60%	2	0.1	100%	100%
	50+									1	0.1	100%	100%
MATH181	Under 20	163	30.7	78%	54%	193	34.9	75%	51%	217	38.8	83%	59%
	20-24	118	23.1	66%	40%	134	24.3	68%	36%	145	28.0	79%	51%
	25-29	43	7.9	49%	37%	38	7.1	60%	33%	29	5.1	82%	46%
	30-34	14	2.4	75%	50%	14	2.5	63%	50%	15	2.5	86%	57%
	35-39	6	1.1	71%	43%	4	0.6	100%	100%	3	0.5	100%	67%
	40-49	2	0.3	100%	50%	2	0.3	50%	50%				
	50+	2	0.3	50%	50%								
MATH182	Under 20	82	15.3	86%	58%	88	16.7	74%	52%	97	19.0	87%	63%
	20-24	85	16.4	85%	53%	78	15.8	74%	54%	70	14.0	76%	55%
	25-29	16	2.7	75%	50%	16	3.1	89%	61%	18	3.8	78%	67%
	30-34	6	1.2	71%	71%	5	1.0	83%	83%	3	0.7	100%	67%
	35-39	3	0.7	50%	50%	4	0.7	100%	75%	3	0.5	100%	100%
	50+	1	0.3	100%	50%								

Appendix A: Program/Course Demographics by Outcome MATH

		2017-18				2018-19				2019-20			
		Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %
MATH183	Under 20	28	4.8	100%	68%	33	6.3	97%	68%	30	5.2	100%	89%
	20-24	56	9.9	84%	70%	54	9.8	88%	68%	58	11.2	87%	75%
	25-29	10	1.9	82%	36%	12	2.2	92%	69%	11	1.9	90%	80%
	30-34	5	0.9	100%	100%	7	1.4	88%	50%	3	0.5	100%	100%
	35-39	3	0.5	67%	33%	3	0.5	33%	33%	4	0.9	80%	80%
	40-49									1	0.2	100%	100%
	50+					1	0.2	100%	100%				
MATH184	Under 20	22	3.8	100%	86%	16	2.8	100%	88%	17	2.9	100%	100%
	20-24	49	9.1	91%	58%	46	8.7	73%	49%	59	11.0	88%	73%
	25-29	11	1.9	100%	55%	6	1.4	88%	38%	13	2.6	93%	57%
	30-34	5	0.9	40%	20%	6	1.0	83%	83%	6	1.0	100%	50%
	35-39	4	0.7	75%	50%	2	0.3	50%	50%	3	0.5	100%	100%
	40-49	1	0.2	100%	100%								
	50+					1	0.2	100%	0%				
MATH309	Under 20	202	35.0	82%	41%	247	45.1	66%	29%	189	33.9	65%	38%
	20-24	72	13.1	77%	60%	71	12.8	77%	44%	67	12.1	83%	64%
	25-29	37	6.3	92%	68%	24	4.4	84%	64%	40	7.4	84%	68%
	30-34	12	2.1	83%	58%	33	6.1	71%	63%	22	3.9	77%	73%
	35-39	22	3.8	91%	82%	11	1.9	91%	73%	15	2.6	87%	80%
	40-49	23	4.1	92%	63%	19	3.5	90%	70%	17	3.3	71%	65%
	50+	9	1.6	89%	78%	20	3.9	86%	68%	16	2.8	86%	71%
MATH311	Under 20	349	53.9	84%	49%	292	42.9	79%	50%	102	15.3	72%	52%
	20-24	181	26.4	81%	59%	123	18.2	70%	48%	90	13.5	75%	56%
	25-29	72	10.5	84%	64%	71	10.5	83%	65%	47	6.7	87%	66%
	30-34	40	5.9	84%	63%	43	6.1	88%	84%	21	3.0	85%	75%
	35-39	23	3.4	58%	54%	17	2.5	88%	88%	16	2.3	88%	75%
	40-49	22	3.3	70%	65%	34	5.2	86%	69%	15	2.0	80%	80%
	50+	8	1.4	50%	30%	16	2.3	94%	69%	1	0.1	100%	100%
MATH321	Under 20	62	6.5	90%	70%	63	6.5	65%	52%	34	3.6	85%	42%
	20-24	61	6.7	88%	80%	64	6.9	84%	58%	15	1.6	79%	50%

Appendix A: Program/Course Demographics by Outcome MATH

		Academic Year 2017-18				2018-19				2019-20			
		Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %
MATH321	25-29	23	2.4	96%	87%	15	1.6	60%	53%	5	0.5	100%	100%
	30-34	9	0.9	67%	44%	10	1.0	80%	80%	2	0.2	100%	100%
	35-39	5	0.5	80%	80%	5	0.5	100%	100%	1	0.2	100%	50%
	40-49	6	0.6	100%	83%	4	0.5	100%	80%	1	0.1	100%	100%
	50+	1	0.1	100%	100%	4	0.4	75%	75%	1	0.1	100%	100%
MATH331	Under 20	655	119.7	78%	51%	502	90.5	77%	46%	351	62.9	70%	43%
	20-24	351	62.0	72%	49%	247	42.2	77%	50%	212	35.3	80%	59%
	25-29	106	17.8	68%	51%	81	12.9	84%	64%	73	12.3	78%	70%
	30-34	51	9.3	76%	59%	40	6.6	81%	62%	47	7.9	79%	65%
	35-39	25	4.1	85%	63%	19	3.2	75%	60%	40	6.8	88%	88%
	40-49	36	5.8	70%	54%	20	3.2	67%	57%	31	5.1	87%	77%
	50+	4	0.7	60%	40%	10	1.5	60%	40%	11	1.8	90%	70%
MATH33..	Under 20									70	4.5	58%	30%
	20-24									13	0.8	91%	64%
	25-29									2	0.1	50%	0%
	30-34									3	0.2	100%	100%
	35-39									3	0.2	100%	50%
	50+									1	0.1	100%	100%
MATH333	Under 20	8	1.2	88%	50%	7	1.0	86%	57%				
	20-24	9	1.3	100%	44%	7	1.0	86%	86%				
	25-29	4	0.6	50%	50%	3	0.4	67%	33%				
	30-34	3	0.4	67%	67%	2	0.3	100%	100%				
	35-39	4	0.6	100%	100%	2	0.3	50%	50%				
	40-49	3	0.4	100%	100%	3	0.4	67%	67%				
	50+	1	0.1	100%	100%	1	0.1	100%	100%				
MATH334	Under 20	3	0.4	67%	0%	2	0.3	100%	100%				
	20-24	7	1.0	86%	57%	6	0.9	100%	83%				
	25-29	3	0.4	100%	100%	3	0.4	100%	67%				
	30-34	2	0.3	100%	100%	2	0.3	100%	100%				
	35-39	3	0.4	100%	67%	1	0.1	100%	100%				

Appendix A: Program/Course Demographics by Outcome MATH

		Academic Year											
		2017-18				2018-19				2019-20			
		Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %
MATH334	40-49	3	0.4	100%	100%	2	0.3	100%	100%				
	50+	1	0.1	100%	100%	1	0.1	100%	100%				
MATH521	Under 20	31	6.5	84%	47%	48	10.5	75%	52%	24	5.2	95%	81%
	20-24	34	7.0	81%	56%	22	4.8	82%	45%	15	3.2	70%	30%
	25-29	19	3.9	85%	55%	15	3.3	93%	80%	11	2.6	73%	55%
	30-34	15	2.9	87%	80%	11	2.4	64%	55%	3	0.7	100%	100%
	35-39	7	1.4	86%	57%	6	1.3	100%	67%	6	1.3	100%	100%
	40-49	8	1.5	88%	88%	5	1.1	80%	60%	9	1.9	89%	67%
	50+	10	1.9	90%	90%	5	1.1	60%	40%	5	1.1	75%	75%
MATH531	Under 20	30	3.1	93%	40%	39	4.0	100%	33%				
	20-24	44	4.6	86%	57%	8	0.8	75%	75%				
	25-29	10	1.0	100%	80%	1	0.1	100%	100%				
	30-34	23	2.4	87%	70%	5	0.5	80%	80%				
	35-39	11	1.1	82%	82%	1	0.1	100%	100%				
	40-49	33	3.4	85%	73%	5	0.5	100%	100%				
	50+	9	0.9	89%	67%	1	0.1	100%	100%				

Appendix A: Program/Course Demographics by Outcome MATH

		2017-18				2018-19				2019-20			
		Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %
MATH100	Asian	1	0.1	0%	0%	3	0.3	100%	67%	2	0.2	100%	50%
	Black									1	0.1	100%	100%
	Filipino	2	0.2	100%	50%	2	0.2	50%	0%	5	0.5	80%	20%
	Hispanic	24	2.6	84%	76%	36	3.9	89%	61%	40	4.1	84%	68%
	Native Am					1	0.1	100%	100%	3	0.3	100%	67%
	White	12	1.3	85%	69%	24	2.6	88%	68%	26	2.7	92%	81%
	Unknown									1	0.1	100%	100%
MATH105	Asian	2	0.3	100%	100%	1	0.1	100%	100%	1	0.1	100%	100%
	Black									2	0.3	100%	100%
	Filipino	2	0.3	50%	50%	2	0.3	100%	100%	1	0.2	100%	100%
	Hispanic	46	6.9	81%	51%	39	5.1	92%	82%	48	7.3	96%	85%
	Native Am	1	0.1	100%	100%	1	0.1	100%	100%	2	0.3	100%	100%
	Pac Isl									1	0.2	100%	0%
	White	15	2.2	88%	59%	25	3.2	100%	92%	23	3.5	96%	91%
	Unknown					1	0.1	100%	0%	2	0.3	100%	100%
MATH121	Asian									1	0.1	100%	100%
	Black	2	0.2	100%	100%	2	0.3	67%	0%	1	0.1	100%	100%
	Filipino	1	0.1	100%	100%	2	0.2	50%	0%	2	0.2	100%	100%
	Hispanic	23	2.5	71%	38%	15	1.8	41%	29%	26	2.9	71%	54%
	Pac Isl	1	0.1	100%	0%								
	White	26	2.7	73%	35%	29	3.0	62%	34%	25	2.7	76%	56%
MATH123	Asian	22	3.7	83%	61%	19	3.0	74%	58%	37	6.5	82%	67%
	Black	32	5.4	82%	73%	38	6.2	58%	39%	44	8.1	82%	76%
	Filipino	46	8.3	78%	73%	42	7.1	79%	57%	50	9.3	83%	71%
	Hispanic	616	110.8	79%	66%	675	119.5	72%	56%	820	149.5	79%	62%
	Native Am	17	2.8	76%	76%	28	4.9	59%	45%	42	7.6	72%	58%
	Other	1	0.2	100%	100%								
	Pac Isl	7	1.4	63%	63%	16	2.9	76%	41%	22	3.9	79%	57%
	White	431	74.2	83%	69%	474	83.9	78%	61%	651	115.2	84%	70%
	Unknown					6	1.2	71%	57%	27	5.2	79%	67%

Academic Year

Appendix A: Program/Course Demographics by Outcome MATH

		Academic Year											
		2017-18				2018-19				2019-20			
		Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %
MATH12..	Asian									4	0.3	33%	33%
	Black									4	0.4	50%	50%
	Filipino									5	0.4	75%	50%
	Hispanic									171	11.9	72%	64%
	Native Am									12	1.0	70%	60%
	Pac Isl									1	0.1	100%	100%
	White									90	6.3	81%	68%
	Unknown									2	0.1	50%	50%
MATH131	Asian	7	1.0	50%	38%	11	1.6	83%	58%	3	0.4	100%	100%
	Black	5	0.5	100%	80%	5	0.6	80%	60%	8	1.1	43%	29%
	Filipino	1	0.2	100%	0%	12	1.8	86%	64%	12	1.5	70%	50%
	Hispanic	121	17.1	74%	51%	83	11.8	82%	67%	96	13.7	80%	70%
	Native Am	2	0.2	100%	100%	2	0.3	100%	100%	3	0.4	100%	67%
	Pac Isl	1	0.1	100%	0%	3	0.5	25%	25%	4	0.6	75%	25%
	White	106	13.6	81%	63%	128	16.3	79%	60%	112	15.1	81%	64%
	Unknown	1	0.1	100%	100%					4	0.6	50%	50%
MATH13..	Black									1	0.1		
	Hispanic									7	0.7	80%	80%
	Native Am									1	0.1	100%	100%
	Pac Isl									1	0.1	100%	0%
	White									7	0.7	100%	67%
	Unknown									1	0.1	100%	100%
MATH135	Asian					4	0.7	80%	60%	5	0.7	80%	80%
	Black									3	0.4	0%	0%
	Filipino	3	0.4	100%	33%	3	0.4	100%	100%	4	0.5	100%	100%
	Hispanic	49	7.7	84%	71%	46	6.3	89%	74%	64	9.7	88%	74%
	Native Am	1	0.1	100%	100%	1	0.1	100%	0%	3	0.4	100%	100%
	Pac Isl					2	0.3	50%	50%	1	0.1	100%	100%
	White	20	2.8	100%	90%	36	4.8	89%	75%	48	7.1	84%	80%
	Unknown	1	0.1	100%	100%								

Appendix A: Program/Course Demographics by Outcome MATH

		Academic Year											
		2017-18				2018-19				2019-20			
		Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %
MATH13..	Asian									1	0.1	100%	100%
	Filipino									1	0.1	100%	100%
	Hispanic									11	1.2	82%	82%
	Pac Isl									1	0.1		
	White									13	1.3	100%	100%
MATH141	Asian	10	2.0	100%	100%	15	3.1	80%	67%	8	1.8	88%	75%
	Black	14	3.1	73%	60%	5	1.2	100%	33%	9	2.1	89%	78%
	Filipino	16	3.4	76%	59%	12	2.8	79%	50%	24	5.5	85%	69%
	Hispanic	180	39.6	81%	62%	163	36.1	79%	60%	188	44.1	79%	55%
	Native Am	11	2.5	83%	50%	7	1.4	71%	57%	7	1.7	50%	50%
	Pac Isl	2	0.4	100%	50%	2	0.4	100%	50%	1	0.2		
	White	131	27.3	80%	71%	159	34.6	84%	64%	187	41.4	78%	60%
	Unknown					3	0.6	100%	100%	8	1.6	86%	71%
MATH14..	Black									3	0.4	100%	75%
	Filipino									4	0.4	100%	100%
	Hispanic									39	4.2	74%	60%
	Native Am									2	0.2	50%	50%
	White									28	2.9	69%	54%
MATH17..	Black					3	0.2	67%	67%				
	Hispanic					47	3.4	64%	53%	3	0.2	100%	100%
	Native Am					3	0.2	67%	67%				
	Pac Isl					2	0.1	50%	0%				
	White					34	2.4	59%	44%	5	0.3	100%	80%
	Unknown									1	0.1	100%	100%
MATH181	Asian	15	2.7	72%	61%	15	2.3	87%	67%	17	3.9	86%	64%
	Black	8	1.4	44%	33%	7	1.0	57%	29%	9	1.6	100%	44%
	Filipino	10	1.8	82%	64%	9	1.6	80%	50%	9	1.7	80%	40%
	Hispanic	173	35.2	69%	44%	181	35.0	68%	39%	177	34.0	83%	54%
	Native Am	6	1.2	57%	29%	11	1.7	73%	45%	9	2.2	73%	27%
	Pac Isl	1	0.2	100%	100%	1	0.2	100%	100%	1	0.2	0%	0%

Appendix A: Program/Course Demographics by Outcome MATH

		Academic Year											
		2017-18				2018-19				2019-20			
		Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %
MATH181	White	129	23.4	72%	49%	154	27.7	73%	48%	180	31.0	81%	60%
	Unknown					1	0.2	100%	100%	2	0.3	50%	0%
MATH182	Asian	13	2.9	88%	41%	11	2.0	67%	42%	10	2.0	91%	73%
	Black	4	0.9	60%	20%	2	0.3	50%	50%	2	0.3	100%	100%
	Filipino	11	2.0	100%	67%	7	1.2	86%	71%	4	0.9	100%	40%
	Hispanic	93	18.2	82%	53%	108	22.6	75%	49%	85	18.4	76%	50%
	Native Am	5	0.9	80%	60%	4	0.7	75%	50%	2	0.3	50%	50%
	Pac Isl	3	0.7	75%	25%	3	0.5	67%	67%	1	0.2	100%	100%
	White	61	11.1	85%	65%	53	10.0	81%	69%	82	15.7	89%	73%
	Unknown									1	0.2	0%	0%
MATH183	Asian	5	0.9	100%	60%	9	1.7	90%	60%	4	0.7	75%	50%
	Black					1	0.2	100%	100%				
	Filipino	10	1.7	80%	80%	5	0.9	100%	80%	4	0.7	100%	100%
	Hispanic	50	8.8	88%	57%	53	9.8	91%	63%	54	10.2	87%	78%
	Native Am	1	0.2	100%	100%	3	0.7	50%	50%	1	0.2	100%	100%
	Pac Isl	1	0.2	0%	0%	2	0.3	100%	50%				
	White	36	6.2	92%	78%	35	6.9	90%	73%	42	7.8	95%	84%
	Unknown									1	0.3	100%	50%
MATH184	Asian	7	1.4	100%	75%	4	0.7	75%	50%	5	1.0	83%	33%
	Black									1	0.2	100%	0%
	Filipino	8	1.4	88%	63%	6	1.0	67%	67%	4	0.7	100%	100%
	Hispanic	43	7.7	93%	56%	37	7.4	81%	49%	54	10.2	89%	75%
	Native Am					2	0.3	50%	50%	1	0.2	100%	100%
	Pac Isl	1	0.2	0%	0%								
	White	33	5.9	88%	71%	28	5.0	83%	69%	33	5.9	97%	82%
MATH309	Asian	4	0.7	50%	25%	7	1.2	57%	43%	3	0.5	100%	100%
	Black	11	1.9	100%	55%	11	1.9	91%	36%	10	2.1	64%	27%
	Filipino	14	2.4	93%	64%	11	1.9	55%	45%	3	0.5	50%	50%
	Hispanic	220	38.6	83%	51%	241	44.3	69%	34%	207	37.1	74%	51%
	Native Am	8	1.4	100%	38%	5	0.9	60%	40%	8	1.4	71%	71%

Appendix A: Program/Course Demographics by Outcome MATH

		Academic Year											
		2017-18				2018-19				2019-20			
		Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %
MATH309	Pac Isl	5	0.8	80%	40%	3	0.7	75%	50%	9	1.8	80%	60%
	White	114	20.1	81%	56%	143	26.2	77%	52%	112	20.1	73%	59%
	Unknown	1	0.2	100%	0%	3	0.5	100%	33%	14	2.5	85%	38%
MATH311	Asian	4	0.7	40%	20%	8	1.1	88%	75%	7	1.1	88%	75%
	Black	28	4.0	71%	46%	23	3.8	81%	50%	10	1.4	78%	67%
	Filipino	10	1.6	73%	45%	12	1.7	92%	50%	5	0.8	83%	67%
	Hispanic	369	57.1	81%	51%	305	44.8	77%	55%	131	19.0	78%	52%
	Native Am	16	2.7	68%	32%	18	2.5	72%	56%	9	1.6	60%	60%
	Pac Isl	4	0.6	100%	100%	4	0.7	60%	20%	3	0.6	50%	25%
	White	259	37.8	84%	62%	220	32.5	81%	60%	121	17.7	79%	68%
	Unknown	3	0.4	100%	100%	4	0.6	100%	100%	5	0.7	60%	60%
MATH321	Asian	5	0.6	83%	83%	7	0.7	71%	71%				
	Black	1	0.1	100%	100%	2	0.2	50%	50%	1	0.1	100%	0%
	Filipino	7	0.7	100%	86%	3	0.3	67%	33%				
	Hispanic	103	11.0	87%	70%	84	9.0	75%	53%	29	3.1	75%	45%
	Native Am	3	0.3	100%	33%	6	0.6	33%	33%	1	0.1		
	Pac Isl	1	0.1	100%	100%								
	White	47	4.9	91%	87%	62	6.5	83%	71%	25	2.8	92%	58%
	Unknown					1	0.1	0%	0%	2	0.2	100%	100%
MATH331	Asian	21	3.8	77%	55%	17	3.0	83%	78%	9	1.7	78%	56%
	Black	42	7.6	74%	51%	26	4.6	71%	43%	24	4.4	64%	40%
	Filipino	30	5.6	76%	67%	31	5.0	78%	38%	18	3.0	86%	57%
	Hispanic	672	121.1	74%	47%	470	83.8	79%	48%	393	69.2	75%	53%
	Native Am	24	4.9	62%	34%	21	3.4	71%	52%	16	2.7	83%	67%
	Pac Isl	9	1.7	50%	20%	8	1.3	75%	25%	11	1.8	50%	40%
	White	419	74.3	79%	58%	338	58.2	76%	52%	266	44.5	79%	62%
	Unknown	4	0.7	75%	75%	3	0.8	80%	60%	27	4.7	73%	54%
MATH33..	Black									3	0.2	50%	0%
	Filipino									1	0.1	100%	0%
	Hispanic									57	3.7	62%	33%

Appendix A: Program/Course Demographics by Outcome MATH

		Academic Year											
		2017-18				2018-19				2019-20			
		Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %
MATH33..	Native Am									1	0.1	100%	0%
	Pac Isl									2	0.1	0%	0%
	White									25	1.6	77%	59%
	Unknown									3	0.2	67%	33%
MATH333	Black	1	0.1	100%	0%	2	0.3	100%	100%				
	Filipino					6	0.9	83%	67%				
	Hispanic	22	3.3	86%	59%	11	1.6	91%	73%				
	Native Am	1	0.1	0%	0%								
	White	8	1.2	100%	88%	6	0.9	50%	50%				
MATH334	Black					1	0.1	100%	100%				
	Filipino					4	0.6	100%	100%				
	Hispanic	14	2.1	86%	57%	9	1.3	100%	89%				
	White	8	1.2	100%	88%	3	0.4	100%	67%				
MATH521	Asian	2	0.3	50%	50%	3	0.7	100%	67%	3	0.7	100%	50%
	Black	4	0.7	50%	25%	1	0.2	0%	0%	6	1.5	50%	33%
	Filipino	3	0.6	100%	67%	1	0.2	0%	0%	1	0.2	100%	100%
	Hispanic	60	12.5	87%	60%	63	13.7	75%	51%	34	7.3	89%	75%
	Native Am	2	0.3	100%	50%	4	0.9	75%	50%	1	0.2	100%	0%
	Pac Isl					2	0.4	100%	50%	1	0.2		
	White	52	10.5	83%	65%	37	8.0	86%	68%	25	5.4	86%	68%
	Unknown					1	0.2	100%	0%	2	0.4	100%	100%
MATH531	Asian	8	0.8	88%	75%	1	0.1	100%	100%				
	Black	11	1.1	91%	64%	2	0.2	100%	0%				
	Filipino	2	0.2	100%	50%	1	0.1	100%	100%				
	Hispanic	84	8.7	88%	64%	33	3.4	91%	45%				
	Native Am	3	0.3	67%	33%	2	0.2	100%	100%				
	White	52	5.4	88%	60%	21	2.2	100%	57%				

Appendix A: Program/Course Demographics by Outcome MATH

		Academic Year											
		2017-18				2018-19				2019-20			
		Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %
MATH100	Female	20	2.2	71%	67%	44	4.9	85%	57%	39	4.0	84%	66%
	Male	18	2.0	95%	74%	22	2.3	95%	73%	39	4.0	92%	73%
	Unknown	1	0.1	100%	100%								
MATH105	Female	58	8.7	87%	55%	65	8.4	95%	86%	71	10.8	97%	87%
	Male	8	1.0	50%	50%	4	0.5	100%	75%	8	1.2	88%	88%
	Unknown									1	0.1	100%	100%
MATH121	Female	25	2.7	69%	31%	21	2.4	57%	30%	23	2.6	81%	52%
	Male	27	2.8	78%	44%	27	2.9	54%	29%	32	3.4	71%	61%
	Unknown	1	0.1	100%	100%								
MATH123	Female	714	125.8	79%	66%	797	141.4	75%	59%	999	180.2	82%	68%
	Male	457	80.8	83%	70%	497	86.5	72%	54%	680	122.5	79%	61%
	Unknown	1	0.2	100%	100%	5	0.8	60%	60%	13	2.6	75%	50%
MATH12..	Female									198	13.8	77%	71%
	Male									89	6.4	69%	52%
	Unknown									2	0.1	100%	100%
MATH131	Female	120	15.6	79%	59%	117	15.9	85%	66%	128	17.6	80%	65%
	Male	123	17.1	77%	54%	127	17.0	76%	59%	112	15.7	79%	63%
	Unknown	1	0.1	0%	0%					2	0.3	50%	50%
MATH13..	Female									4	0.4	100%	75%
	Male									14	1.5	90%	70%
MATH135	Female	26	3.7	100%	93%	46	6.2	89%	70%	42	6.0	91%	79%
	Male	48	7.4	83%	66%	45	6.3	87%	77%	86	12.9	84%	76%
	Unknown					1	0.1	100%	100%				
MATH13..	Female									6	0.7	67%	67%
	Male									21	2.2	100%	100%
MATH141	Female	150	31.7	79%	71%	151	32.2	85%	68%	176	37.6	78%	65%
	Male	212	46.4	81%	61%	212	47.4	80%	57%	248	58.6	81%	56%
	Unknown	1	0.2	100%	100%	3	0.6	67%	33%	8	2.1	56%	22%
MATH14..	Female									29	3.0	71%	71%
	Male									46	5.1	76%	55%

Appendix A: Program/Course Demographics by Outcome MATH

		Academic Year											
		2017-18				2018-19				2019-20			
		Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %
MATH14..	Unknown									1	0.1	100%	0%
MATH17..	Female					64	4.6	63%	53%	5	0.3	100%	80%
	Male					24	1.7	63%	42%	3	0.2	100%	100%
	Unknown					1	0.1	0%	0%	1	0.1	100%	100%
MATH181	Female	125	23.8	63%	40%	141	23.9	68%	43%	162	29.4	79%	58%
	Male	217	42.0	74%	50%	238	45.7	73%	44%	241	45.4	84%	54%
MATH182	Female	45	8.6	82%	66%	49	9.3	72%	59%	51	10.3	83%	65%
	Male	145	28.1	84%	52%	139	28.1	77%	54%	136	27.7	82%	59%
MATH183	Female	17	3.1	78%	72%	22	4.1	92%	83%	16	3.1	89%	83%
	Male	85	14.8	91%	65%	86	16.3	89%	62%	90	16.7	91%	79%
MATH184	Female	18	3.1	89%	56%	17	3.1	89%	67%	15	2.9	88%	81%
	Male	73	13.0	92%	66%	60	11.4	77%	55%	83	15.2	93%	74%
	Unknown	1	0.3	50%	0%								
MATH309	Female	202	35.6	83%	58%	221	40.4	69%	44%	222	39.9	73%	51%
	Male	172	29.8	82%	47%	197	36.3	75%	38%	136	24.9	75%	56%
	Unknown	3	0.5	100%	0%	6	1.1	50%	33%	7	1.2	80%	60%
MATH311	Female	390	58.9	83%	59%	298	44.0	77%	55%	177	26.3	76%	58%
	Male	294	44.5	79%	50%	292	43.1	81%	58%	111	16.2	80%	64%
	Unknown	8	1.5	100%	10%	4	0.6	100%	75%	3	0.4	67%	33%
MATH321	Female	69	7.4	88%	78%	68	7.3	77%	56%	28	3.0	87%	43%
	Male	97	10.2	90%	74%	96	10.0	73%	61%	29	3.2	84%	60%
	Unknown	1	0.1	100%	100%	1	0.1	100%	100%	1	0.1		
MATH331	Female	690	122.8	75%	51%	510	87.8	78%	53%	360	61.1	75%	54%
	Male	523	95.3	76%	51%	398	71.0	77%	46%	391	68.5	78%	58%
	Unknown	8	1.4	63%	63%	7	1.3	75%	38%	13	2.4	50%	33%
MATH33..	Female									49	3.2	65%	39%
	Male									40	2.6	68%	38%
	Unknown									3	0.2	33%	0%
MATH333	Female	23	3.4	91%	61%	20	3.0	75%	65%				
	Male	9	1.3	78%	67%	5	0.7	100%	80%				

Appendix A: Program/Course Demographics by Outcome MATH

		Academic Year											
		2017-18				2018-19				2019-20			
		Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %
MATH334	Female	15	2.2	87%	73%	13	1.9	100%	85%				
	Male	7	1.0	100%	57%	4	0.6	100%	100%				
MATH521	Female	84	17.0	84%	58%	64	13.9	75%	56%	51	11.2	83%	66%
	Male	38	7.9	85%	67%	46	10.0	83%	54%	22	4.7	90%	70%
	Unknown	1	0.2	100%	100%	2	0.4	100%	50%				
MATH531	Female	65	6.7	91%	57%	39	4.0	95%	49%				
	Male	93	9.6	86%	67%	21	2.2	95%	57%				
	Unknown	2	0.2	100%	50%								

Appendix A: Program/Course Demographics by Outcome MATH

		Academic Year											
		2017-18				2018-19				2019-20			
		Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %
MATH100	First Time	1	0	100%	100%	3	0	100%	100%	8	1	88%	38%
	First Time Transfer	1	0	0%	0%	1	0	100%	0%	1	0		
	Continuing	34	4	83%	69%	60	7	87%	60%	66	7	89%	73%
	Returning	3	0	100%	100%	1	0	100%	100%	3	0	67%	67%
	Special Admit					1	0	100%	100%				
MATH105	First Time	5	1	80%	60%	8	1	100%	75%	15	2	87%	67%
	First Time Transfer	1	0	100%	0%	1	0	100%	100%	1	0	100%	100%
	Continuing	60	9	84%	57%	58	8	95%	86%	63	10	98%	92%
	Returning	2	0	50%	0%	2	0	100%	100%	1	0	100%	100%
MATH121	First Time	3	0	67%	0%	5	1	80%	20%	2	0	100%	100%
	First Time Transfer	2	0	50%	0%	1	0	100%	100%	6	1	60%	60%
	Continuing	48	5	76%	43%	41	5	52%	30%	44	5	79%	57%
	Returning					1	0	0%	0%	2	0	0%	0%
	Special Admit									1	0	100%	100%
MATH123	First Time	138	24	81%	64%	198	34	77%	61%	342	59	79%	59%
	First Time Transfer	54	9	76%	72%	46	7	77%	63%	51	10	96%	83%
	Continuing	889	158	79%	66%	1,030	179	73%	56%	1,247	223	81%	66%
	Returning	32	5	72%	72%	36	6	75%	58%	55	10	83%	69%
	Special Admit	77	12	97%	97%	15	2	73%	67%	23	4	91%	83%
MATH12..	First Time									89	6	68%	53%
	First Time Transfer									5	0	80%	80%
	Continuing									192	14	77%	70%
	Returning									3	0	67%	67%
	Special Admit									1	0	100%	100%
MATH131	First Time	43	5	84%	56%	55	7	85%	58%	36	5	69%	44%
	First Time Transfer	22	3	82%	64%	18	2	89%	72%	13	1	77%	54%
	Continuing	168	23	75%	56%	161	22	77%	65%	175	25	82%	70%
	Returning	12	1	92%	50%	6	1	83%	33%	15	2	77%	46%
	Special Admit	2	0	50%	50%	8	1	88%	38%	4	0	75%	75%
MATH13..	First Time									4	0	75%	75%

Appendix A: Program/Course Demographics by Outcome MATH

		2017-18				2018-19				2019-20			
		Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %
MATH13..	Continuing									13	1	100%	70%
	Returning									1	0		
MATH135	First Time	6	1	100%	67%	7	1	71%	71%	6	1	100%	100%
	First Time Transfer	1	0	100%	100%	1	0	100%	100%				
	Continuing	66	10	88%	75%	84	12	90%	73%	121	18	85%	76%
	Returning	1	0	100%	100%					1	0	100%	100%
MATH13..	Continuing									26	3	92%	92%
	Returning									1	0	100%	100%
MATH141	First Time	65	13	88%	65%	91	19	82%	55%	96	20	77%	50%
	First Time Transfer	33	7	88%	70%	31	6	94%	77%	23	5	95%	84%
	Continuing	235	51	77%	63%	223	49	78%	58%	270	61	76%	55%
	Returning	14	3	71%	57%	3	1	100%	100%	15	3	55%	45%
	Special Admit	24	5	100%	96%	29	6	97%	86%	46	9	100%	89%
MATH14..	First Time									32	3	75%	63%
	First Time Transfer									1	0	100%	0%
	Continuing									43	4	72%	61%
	Returning									2	0	100%	0%
	Special Admit									1	0	100%	100%
MATH17..	First Time					1	0	0%	0%				
	Continuing					86	6	62%	49%	7	0	100%	100%
	Returning					2	0	100%	100%	2	0	100%	50%
MATH181	First Time	59	10	88%	66%	83	14	76%	65%	77	13	83%	58%
	First Time Transfer	17	2	71%	53%	30	4	87%	60%	27	4	88%	71%
	Continuing	259	51	67%	42%	263	49	67%	36%	284	53	80%	52%
	Returning	6	1	50%	50%	9	1	100%	56%	12	2	100%	67%
	Special Admit	12	2	69%	46%	7	1	57%	43%	19	3	80%	60%
MATH182	First Time	12	2	83%	58%	7	1	57%	43%	10	2	100%	22%
	First Time Transfer	1	0	100%	0%	4	1	100%	50%	6	1	100%	0%
	Continuing	173	33	84%	56%	178	35	76%	55%	167	33	81%	63%
	Returning	2	0	100%	50%	2	0	100%	100%	2	0	0%	0%

Appendix A: Program/Course Demographics by Outcome MATH

		Academic Year											
		2017-18				2018-19				2019-20			
		Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %
MATH182	Special Admit	4	1	80%	40%	2	0	100%	100%	10	2	100%	91%
MATH183	First Time	1	0	0%	0%	2	0	100%	100%	2	0	100%	100%
	First Time Transfer	2	0	100%	100%	2	0	100%	50%	6	1	67%	50%
	Continuing	97	17	90%	67%	102	19	89%	65%	95	18	92%	80%
	Returning	2	0	50%	50%	1	0	100%	100%	2	0	100%	100%
	Special Admit					2	0	100%	100%	3	1	100%	100%
MATH184	First Time									1	0	100%	100%
	First Time Transfer	1	0	0%	0%	2	0	100%	50%	3	1	100%	33%
	Continuing	90	16	91%	63%	74	14	80%	58%	91	17	91%	76%
	Returning					1	0	0%	0%	2	0	100%	50%
	Special Admit	1	0	100%	100%					2	0	100%	100%
MATH309	First Time	130	22	80%	40%	179	32	69%	28%	104	18	69%	34%
	First Time Transfer	6	1	67%	33%	9	2	89%	67%	8	1	38%	25%
	Continuing	231	41	85%	58%	229	42	73%	47%	232	42	77%	62%
	Returning	15	3	87%	67%	15	3	87%	73%	26	5	83%	71%
MATH311	First Time	245	36	84%	49%	239	35	80%	54%	68	10	74%	55%
	First Time Transfer	30	4	90%	60%	22	3	82%	64%	11	2	91%	82%
	Continuing	393	58	80%	56%	303	45	77%	56%	183	27	78%	60%
	Returning	52	7	71%	62%	38	5	82%	72%	33	5	79%	64%
MATH321	First Time	26	3	85%	65%	23	2	61%	48%	12	1	82%	27%
	First Time Transfer	3	0	100%	100%	4	0	75%	50%				
	Continuing	131	14	89%	76%	131	14	78%	61%	44	5	89%	61%
	Returning	7	1	100%	86%	7	1	71%	71%	2	0	0%	0%
MATH331	First Time	385	66	80%	54%	314	53	79%	51%	198	34	64%	34%
	First Time Transfer	44	7	76%	53%	29	5	90%	76%	22	4	84%	79%
	Continuing	780	137	73%	50%	562	95	76%	47%	519	87	81%	64%
	Returning	59	10	81%	51%	41	7	67%	60%	48	8	78%	60%
MATH33..	First Time									54	3	53%	25%
	First Time Transfer									2	0	100%	100%
	Continuing									34	2	89%	63%

Appendix A: Program/Course Demographics by Outcome MATH

		2017-18				2018-19				2019-20			
		Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %	Headcou..	FTES	Retention %	Success %
MATH33..	Returning									2	0	50%	0%
MATH333	First Time	4	1	75%	50%	5	1	80%	60%				
	Continuing	26	4	88%	65%	19	3	79%	68%				
	Returning	2	0	100%	50%	1	0	100%	100%				
MATH334	First Time Transfer	1	0	100%	100%								
	Continuing	21	3	90%	67%	16	2	100%	94%				
	Returning					1	0	100%	0%				
MATH521	First Time	36	7	81%	47%	47	10	74%	53%	16	3	100%	57%
	First Time Transfer	9	2	100%	78%	11	2	82%	45%	1	0	100%	0%
	Continuing	63	12	86%	68%	50	11	84%	62%	47	10	82%	76%
	Returning	18	4	78%	56%	4	1	50%	25%	9	2	75%	50%
MATH531	First Time	41	4	95%	59%	40	4	98%	35%				
	First Time Transfer	14	1	71%	50%	1	0	100%	100%				
	Continuing	99	10	87%	66%	16	2	88%	81%				
	Returning	6	1	100%	67%	3	0	100%	100%				

Appendix B: Major match detail

--If a student has the same program of study and major as the award earned they will be a 'Major Match'. If not they will be a 'Major Split'.

--Headcount & Percentages are the students who are a major match/split for a specific award.

<u>--Data is sorted by program/major of the earned award.</u>

						Academic Year Graduation Desc					
Major Match	Program Desc	Degree	Degree Major	Student Major	Degree Desc (group)	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
Match	Mathem..	AA	Math: Physics Emphasis	Math: Physics Emphasis	Associate in Arts (A)	2			1	1	1
			Mathematics: Comp Sci Em..	Mathematics: Comp Sci Emph..	Associate in Arts (A)		1	1	1		1
		AS-T	Mathematics for Transfer	Mathematics for Transfer	Associate in Science - Tr..	3	1	3	2	4	6
		Total				**5**	**2**	**4**	**4**	**5**	**8**
	Total					**5**	**2**	**4**	**4**	**5**	**8**
Split	Mathem..	AA	Math: Physics Emphasis	Accounting	Associate in Arts (A)						2
				Architectural Drafting	Associate in Arts (A)		1				
				Biology	Associate in Arts (A)			1	1		
				Chemistry	Associate in Arts (A)	1		1	1	1	
				Chemistry for Transfer	Associate in Arts (A)						1
				Civil Engineering	Associate in Arts (A)	1	2		2		
				Computer Science	Associate in Arts (A)	7	1	3	5	3	2
				Electronic Engineering Tech	Associate in Arts (A)	1			1	3	
				Engineering	Associate in Arts (A)	11	13	6	10	9	16
				Engineering Technology	Associate in Arts (A)			1			
				Engr Tech: Mechatronics	Associate in Arts (A)				1		
				Management	Associate in Arts (A)						1
				Mathematics and Science	Associate in Arts (A)		1	1			
				Mathematics for Transfer	Associate in Arts (A)			1	1		
				Physics	Associate in Arts (A)			1			1
				Psychology	Associate in Arts (A)	1					
				Registered Nursing	Associate in Arts (A)			1			
				Undeclared	Associate in Arts (A)		1				
				Viticulture	Associate in Arts (A)				1		
			Mathematics: Comp Sci Emphasis	Accounting	Associate in Arts (A)						1
				Biology	Associate in Arts (A)	1					
				Chemistry	Associate in Arts (A)		1	1			
				Computer Science	Associate in Arts (A)	8	2	5	9	6	3
				Computer Science for Transfer	Associate in Arts (A)						2
				Electronic Engineering Tech	Associate in Arts (A)	1					
				Engineering	Associate in Arts (A)	1	2	2		1	
				Math: Physics Emphasis	Associate in Arts (A)				1		

Appendix B: Major match detail

--If a student has the same program of study and major as the award earned they will be a 'Major Match'. If not they will be a 'Major Split'.

--Headcount & Percentages are the students who are a major match/split for a specific award.

<u>--Data is sorted by program/major of the earned award.</u>

						Academic Year Graduation Desc					
Major Match	Program Desc	Degree	Degree Major	Student Major	Degree Desc (group)	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
Split	Mathem..	AA	Mathematics: Comp Sci Emphasis	Mathematics and Science	Associate in Arts (A)			2			
				Mathematics for Transfer	Associate in Arts (A)			2			
				Undeclared	Associate in Arts (A)		1				
		AS-T	Mathematics for Transfer	Accounting	Associate in Science - Tr..						2
				Architectural Drafting	Associate in Science - Tr..				1		
				Automotive Chassis	Associate in Science - Tr..				1		
				Biology	Associate in Science - Tr..				1		
				Business Admin for Transfer	Associate in Science - Tr..						1
				Chemistry	Associate in Science - Tr..	1		2	1		
				Chemistry for Transfer	Associate in Science - Tr..					1	
				Civil Engineering	Associate in Science - Tr..	1		1		1	
				Computer Science	Associate in Science - Tr..	10	1	2	3	6	3
				Computer Science for Transfer	Associate in Science - Tr..						2
				Electronic Engineering Tech	Associate in Science - Tr..	1			1	1	
				Engineering	Associate in Science - Tr..	8	4	2	6	9	10
				Engr Tech: Mechatronics	Associate in Science - Tr..				1		
				Film And Video Production	Associate in Science - Tr..	1					
				Graphic Communication	Associate in Science - Tr..			1			
				Math: Physics Emphasis	Associate in Science - Tr..	1	1			1	
				Mathematics and Science	Associate in Science - Tr..		1		1		1
				Mathematics for Transfer	Associate in Science - Tr..						1
				Mathematics: Comp Sci Emph..	Associate in Science - Tr..					1	2
				Physics	Associate in Science - Tr..					1	1
				Police Academy	Associate in Science - Tr..	1					
				Preschool Infant/Toddler	Associate in Science - Tr..						1
				Psychology	Associate in Science - Tr..	1					
				Undeclared	Associate in Science - Tr..		1				
		Total				**38**	**24**	**27**	**35**	**31**	**42**
	Mathematics for Transfer	AS-T	Mathematics for Transfer	Computer Science for Transfer	Associate in Science - Tr..						1
				Engineering	Associate in Science - Tr..						1
		Total									**2**
	Total					**38**	**24**	**27**	**35**	**31**	**42**

Appendix B: Major match detail

--If a student has the same program of study and major as the award earned they will be a 'Major Match'. If not they will be a 'Major Split'.

--Headcount & Percentages are the students who are a major match/split for a specific award.

<u>--Data is sorted by program/major of the earned award.</u>

						Academic Year Graduation Desc					
Major Match	Program Desc	Degree	Degree Major	Student Major	Degree Desc (group)	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
Grand Total						42	26	29	39	36	49

Comprehensive Program Review (CPR) Learning Outcomes Assessment Data

This document contains the data from the last 6 years as reported to Institutional Effectiveness via eLumen. The packet contains charts and tables that indicate outcome performance by Course Learning Outcomes (CLO), Program Learning Outcomes (PLO), and Institutional Learning Outcomes (ILO).

Sample Question from the CPR:

What are your program student learning outcomes? Have each of these been assessed since the last comprehensive program review?

Items to look for:

1. Courses with little to no completed assessments; 2. Table Data in red that indicates performance that was below the 70% benchmark; 3. Improvement plans that have suggestions for improvements; 4. Any patterns in data or missing data that is concerning or lauding

1. Historical PLO Performance Chart: Mathematics- This is a chart showing the PLO percent and the count of students that met standards by term.

2.Historical PLO Performance Table: Mathematics- This is a table showing the overal PLO performance over the last 6 academic years, including percent and numbers of students meeting standards.

3. PLO Performance by Demographic: Mathematics- This chart shows the PLO performance reported by gender, ethnicity, first-gen, etc.

4. PLO Performance by Demographic Chart: Mathematics- This is the chart of the **percent of students that met the standard** of the given PLO.

5. Historical CLO Performance Chart : Mathematics- This is a chart showing the CLO percent met and the count of students that met standards by term.

6. Historical CLO Performance Table: Mathematics- This is a chart of the table above.

7. Historical Course Performance: Mathematics- This is SLO assessment by course, including percent and number of students that met standards.

8. ILO Performance Table: Mathematics- This is the ILO performance of the program for the past 6 academic years.

9. ILO Performance Chart: Mathematics- This is the ILO performance of the program for the past 6 academic years in a table that includes the number of courses that are connected to each ILO.

10. Historical Associations- CLOs and ILOs/PLOs: MATH- These are the CLO and ILO associations. *Note: Old: Associations from eLumen, Current: ILO Associations, and NEW: Associations made with PLO cycles post 2020.*

11. Historical Associations ILO/PLO: MATH- These are the Course and ILO associations. *Note: Old: Associations from eLumen, Current: ILO Associations, and NEW: Associations made with PLO cycles post 2020.*

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

13. Program Learning Outcomes: Mathematics- List of PLOs for the selected program.

14. Course Learning Outcomes: Mathematics- List of CLOs for the selected program.

Term
Multiple values

Term
Multiple values

Term
Multiple values

Department
Mathematics

Program
Mathematics

Program
MATH

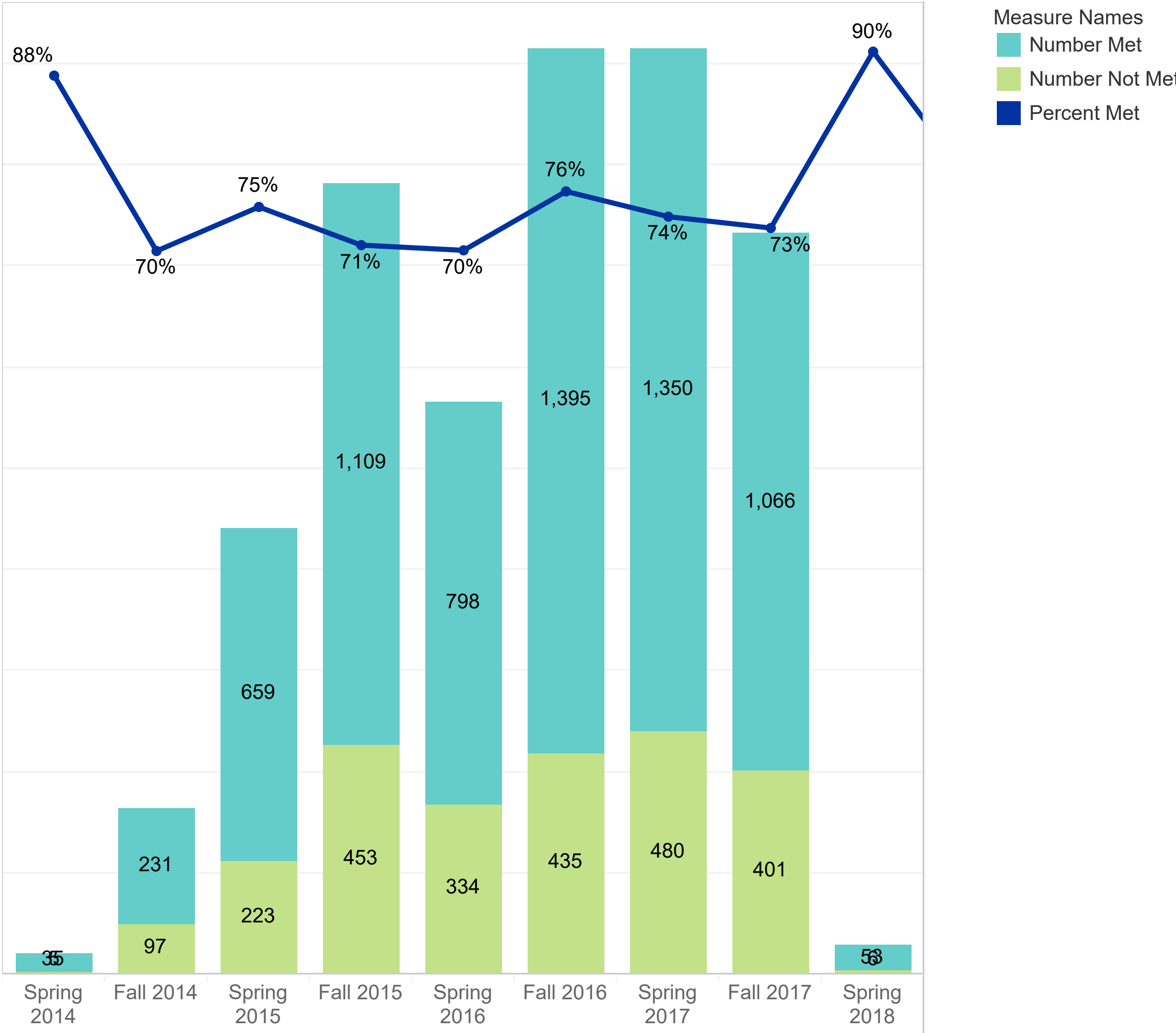
Program
MATH

Program
Mathematics

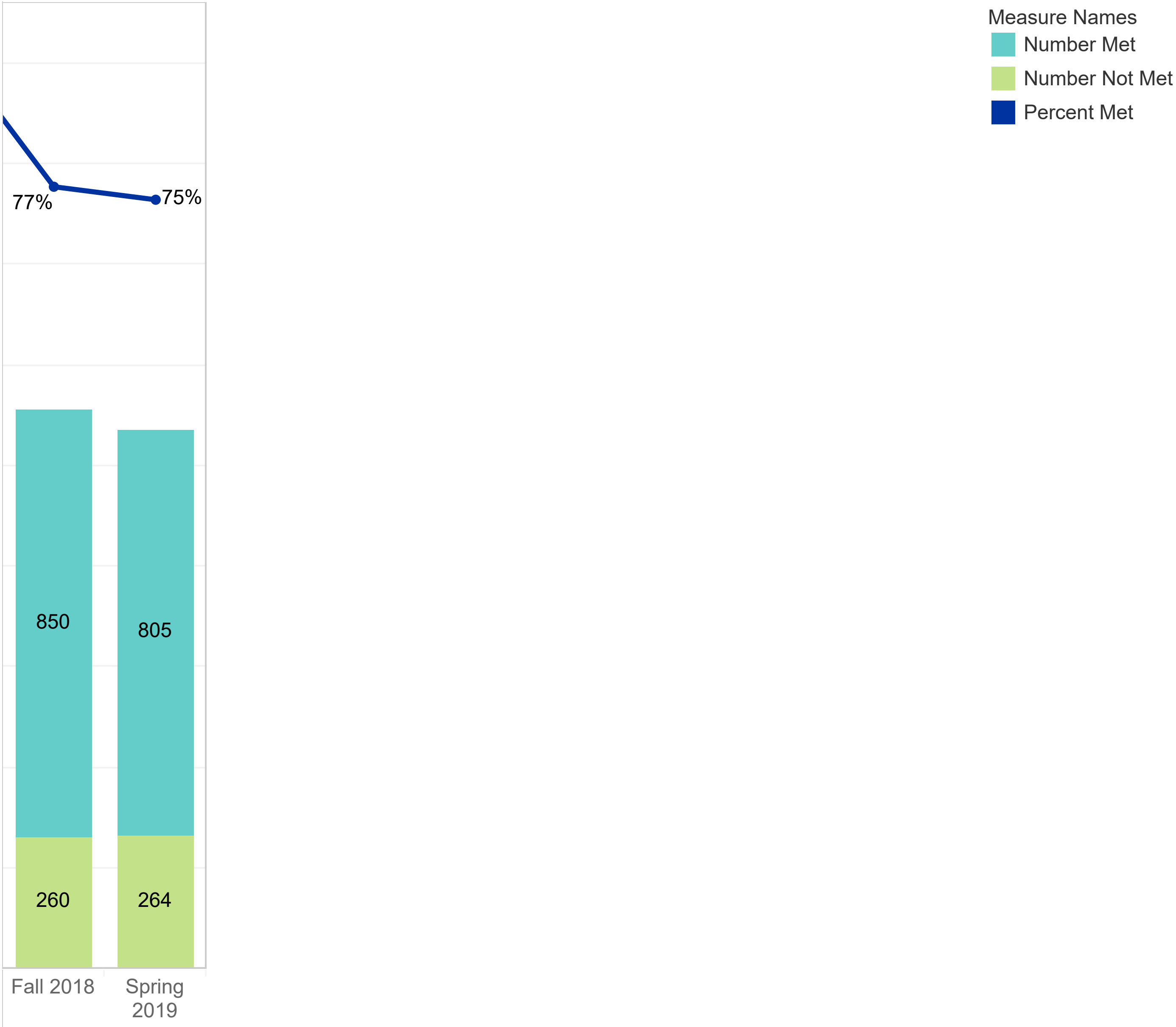
Program
Mathematics

Program
Mathematics

1. Historical PLO Performance Chart: Mathematics- This is a chart showing the PLO percent and the count of students that met standards by term.



1. Historical PLO Performance Chart: Mathematics- This is a chart showing the PLO percent and the count of students that met standards by term.



2.Historical PLO Performance Table: Mathematics- This is a table showing the overal PLO performance over the last 6 academic years, including percent and numbers of students meeting standards.

			Number Met	Number Not Met	Percent Met
MATH	MATH PSLO - Use appropriate technologies to analyze and solve mathematical problems, verify the ..	MATH100	18	5	78%
		Total	18	5	78%
	MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and sol..	MATH100	22	11	67%
		Total	22	11	67%
	No PLO Associated	MATH100	92	38	71%
		MATH105	151	52	74%
		MATH121	79	26	75%
		MATH123	1,907	523	78%
		MATH131	305	154	66%
		MATH135	152	50	75%
		MATH141	984	247	80%
		MATH181	493	225	69%
		MATH182	319	143	69%
		MATH183	308	92	77%
		MATH184	228	50	82%
		MATH309	168	72	70%
		MATH311	995	435	70%
		MATH321	198	58	77%
		MATH331	1,588	653	71%
		MATH333	50	8	86%
		MATH521	168	53	76%
		MATH531	126	63	67%
		Total	8,311	2,942	74%
	Total		8,351	2,958	74%

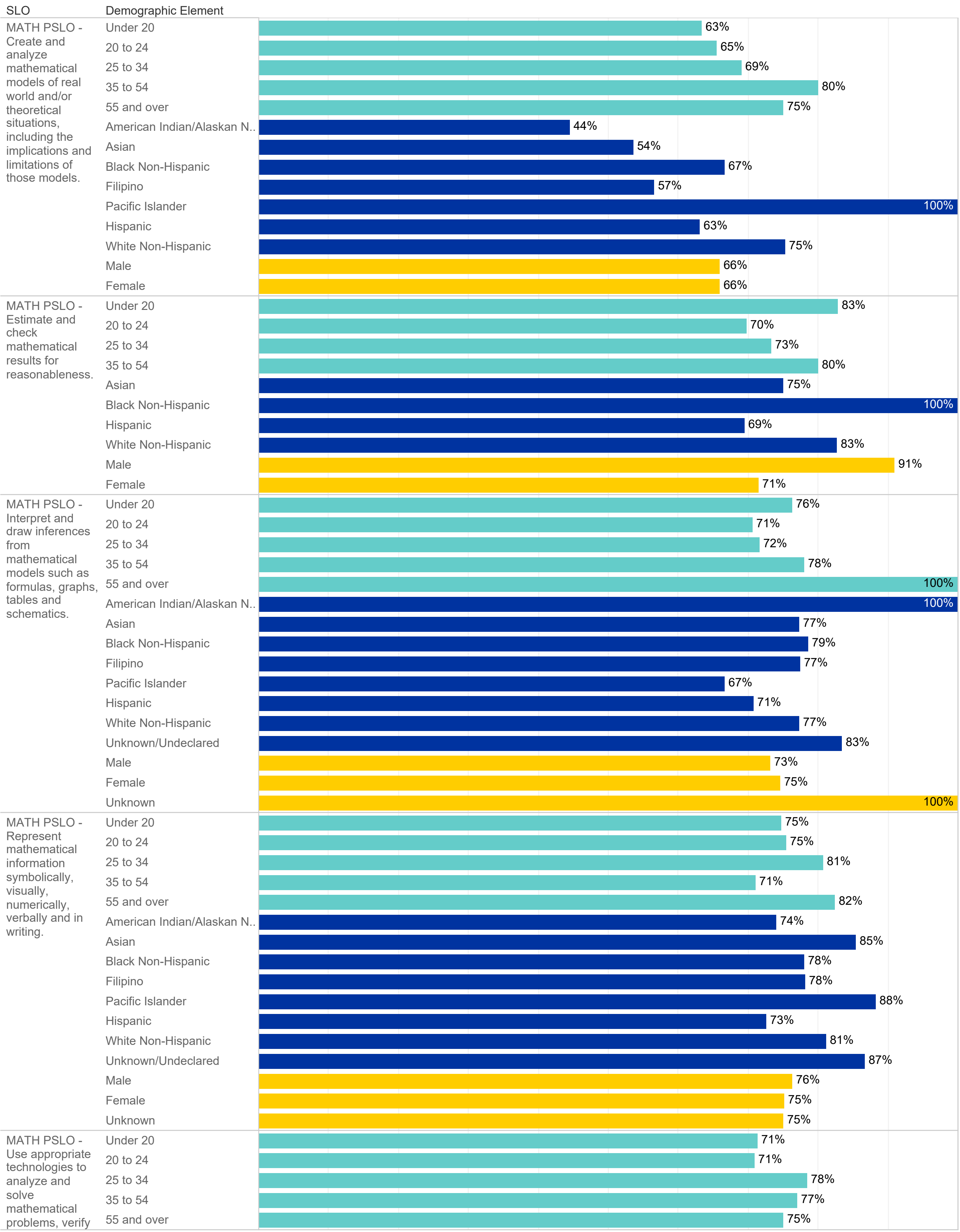
3. PLO Performance by Demographic: Mathematics- This chart shows the PLO performance reported by gender, ethnicity, first-gen, etc.

		Met	Not Met	Percent ..
MATH PSLO - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.	Under 20	157	91	63%
	20 to 24	218	115	65%
	25 to 34	58	26	69%
	35 to 54	20	5	80%
	55 and over	3	1	75%
	American Indian/Alaskan N..	4	5	44%
	Asian	15	13	54%
	Black Non-Hispanic	6	3	67%
	Filipino	13	10	57%
	Pacific Islander	2	0	100%
	Hispanic	275	161	63%
	White Non-Hispanic	140	46	75%
	Female	236	122	66%
	Male	226	117	66%
MATH PSLO - Estimate and check mathematical results for reasonableness.	Under 20	24	5	83%
	20 to 24	46	20	70%
	25 to 34	11	4	73%
	35 to 54	4	1	80%
	Asian	3	1	75%
	Black Non-Hispanic	2	0	100%
	Hispanic	59	26	69%
	White Non-Hispanic	19	4	83%
	Female	75	30	71%
	Male	10	1	91%
MATH PSLO - Interpret and draw inferences from mathematical models such as formulas, graphs, tables and schematics.	Under 20	433	135	76%
	20 to 24	330	137	71%
	25 to 34	108	43	72%
	35 to 54	39	11	78%
	55 and over	6	0	100%
	American Indian/Alaskan N..	7	0	100%
	Asian	34	10	77%
	Black Non-Hispanic	22	6	79%
	Filipino	41	12	77%
	Pacific Islander	4	2	67%
	Hispanic	488	202	71%
	White Non-Hispanic	309	91	77%
	Unknown/Undeclared	10	2	83%
	Female	446	152	75%
	Male	470	173	73%
	Unknown	2	0	100%
MATH PSLO - Represent mathematical information symbolically, visually, numerically, verbally and in writing.	Under 20	971	329	75%
	20 to 24	796	259	75%
	25 to 34	341	82	81%
	35 to 54	110	45	71%

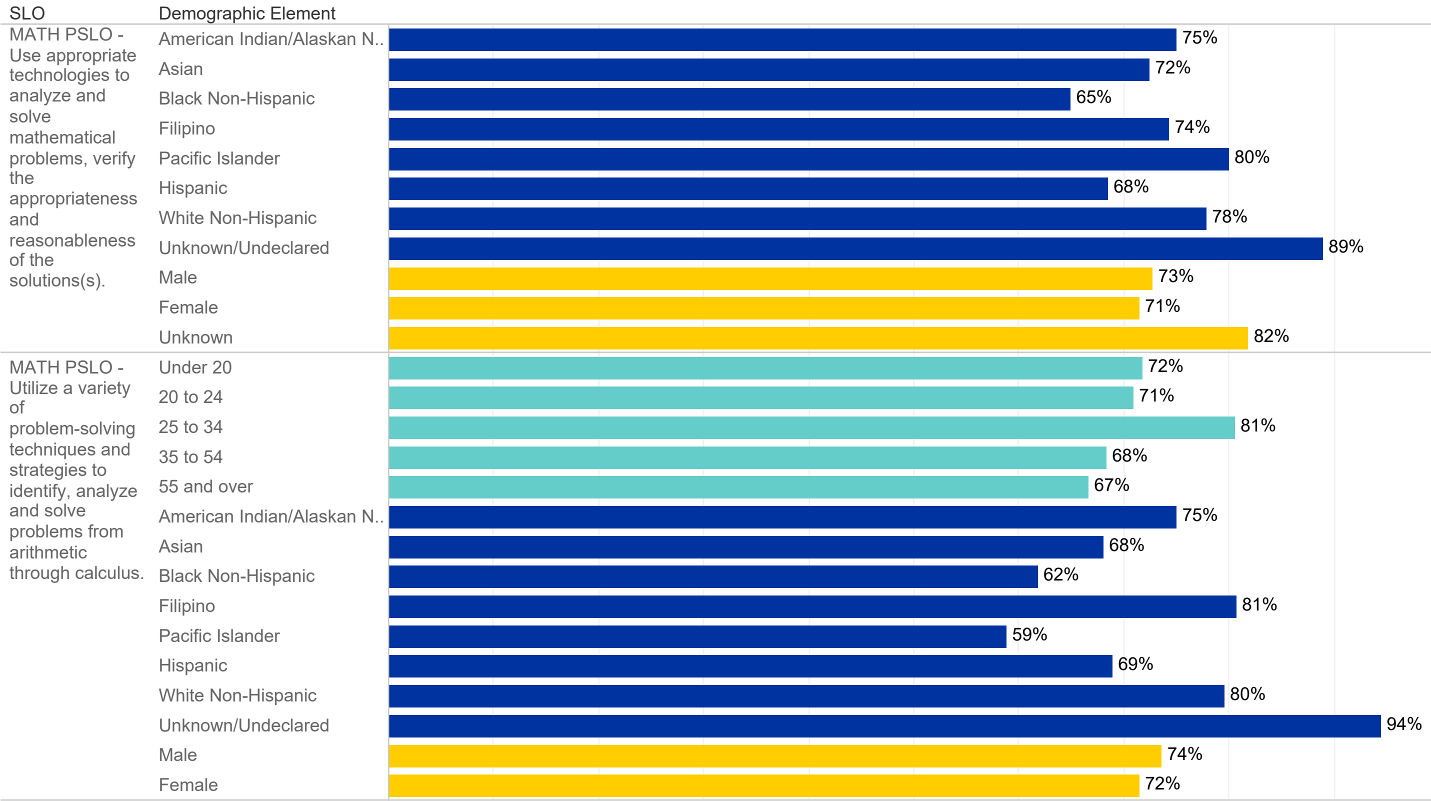
3. PLO Performance by Demographic: Mathematics- This chart shows the PLO performance reported by gender, ethnicity, first-gen, etc.

		Met	Not Met	Percent ..
MATH PSLO - Represent mathematical information symbolically, visually, numerically, verbally and in writing.	55 and over	14	3	82%
	American Indian/Alaskan N..	20	7	74%
	Asian	41	7	85%
	Black Non-Hispanic	60	17	78%
	Filipino	89	25	78%
	Pacific Islander	15	2	88%
	Hispanic	1,326	500	73%
	White Non-Hispanic	668	155	81%
	Unknown/Undeclared	13	2	87%
	Female	1,250	413	75%
	Male	979	304	76%
	Unknown	3	1	75%
MATH PSLO - Use appropriate technologies to analyze and solve mathematical problems, verify the appropriateness and reasonableness of the solutions(s).	Under 20	571	230	71%
	20 to 24	428	176	71%
	25 to 34	163	45	78%
	35 to 54	47	14	77%
	55 and over	6	2	75%
	American Indian/Alaskan N..	6	2	75%
	Asian	42	16	72%
	Black Non-Hispanic	24	13	65%
	Filipino	49	17	74%
	Pacific Islander	4	1	80%
	Hispanic	627	289	68%
	White Non-Hispanic	441	126	78%
	Unknown/Undeclared	16	2	89%
	Female	582	233	71%
	Male	624	234	73%
	Unknown	9	2	82%
MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus.	Under 20	747	294	72%
	20 to 24	762	312	71%
	25 to 34	299	72	81%
	35 to 54	80	37	68%
	55 and over	12	6	67%
	American Indian/Alaskan N..	15	5	75%
	Asian	49	23	68%
	Black Non-Hispanic	34	21	62%
	Filipino	100	24	81%
	Pacific Islander	10	7	59%
	Hispanic	1,076	485	69%
	White Non-Hispanic	600	154	80%
	Unknown/Undeclared	17	1	94%
	Female	954	380	72%
	Male	946	340	74%

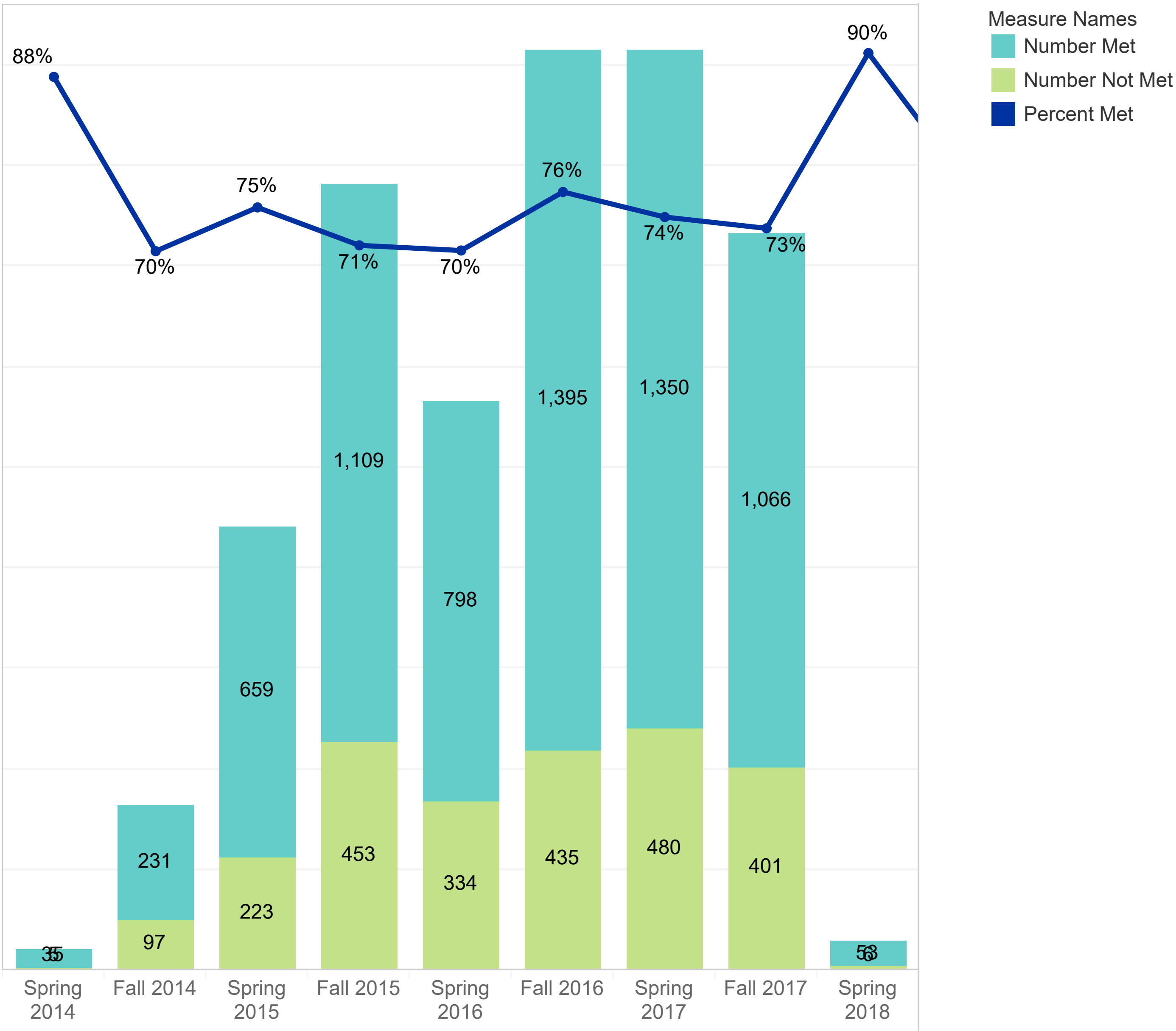
4. PLO Performance by Demographic Chart: Mathematics- This is the chart of the **percent of students that met the standard** of the given PLO.



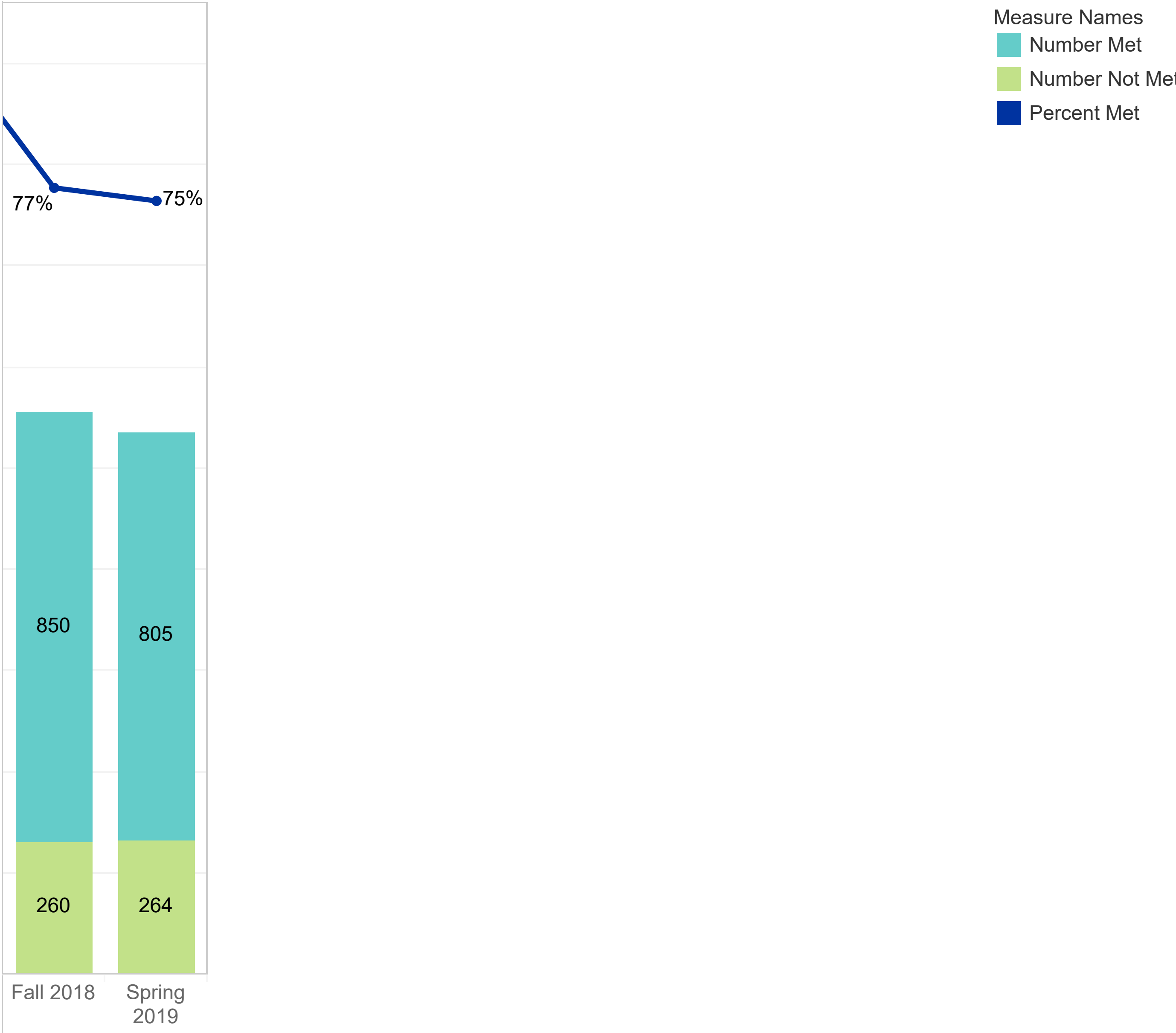
4. PLO Performance by Demographic Chart: Mathematics- This is the chart of the **percent of students that met the standard** of the given PLO.



5. Historical CLO Performance Chart : Mathematics- This is a chart showing the CLO percent met and the count of students that met standards by term.



5. Historical CLO Performance Chart : Mathematics- This is a chart showing the CLO percent met and the count of students that met standards by term.



6. Historical CLO Performance Table: Mathematics- This is a chart of the table above.

			Number Met	Number Not Met	Percent Met
MATH100	MATH1	Evaluate and apply methods of gathering, organizing, summarizing, and analyzing data.	18.0	15.0	55%
		Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.	22.0	11.0	67%
	MATH2	Relate and apply elementary probability theory to calculate probabilities of events or solve appropriate level application problems.	14.0	6.0	70%
	MATH3	Demonstrate an ability to read and comprehend statistical studies or cite specific examples of how mathematics interacts with society.	12.0	6.0	67%
	MATH4	Demonstrate the ability to solve problems in the areas of social choice; management science; and geometric and algebraic patterns.	48.0	11.0	81%
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.	18.0	5.0	78%
MATH105	MATH1	Perform the four basic operations with real numbers and explain the underlying mathematical concepts of arithmetic algorithms.	30.0	11.0	73%
		Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.	24.0	6.0	80%
	MATH2	Determine an appropriate strategy to solve a problem, model a problem mathematically and solve it, and use mathematical reasoning and common sense to interpret the solution.	52.0	24.0	68%
	MATH3	Demonstrate an understanding of different numeration systems including early historical counting systems.	13.0	9.0	59%
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.	32.0	2.0	94%
MATH121	MATH2	Be able to define the six trigonometric ratios and apply them to solve applied problems.	16.0	9.0	64%
	MATH4	Be able to solve a variety of trigonometric equations and real world problems using oblique triangles	36.0	10.0	78%
	MATH5	Be able to define and use complex numbers in trigonometric form.	15.0	5.0	75%
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.	12.0	2.0	86%
MATH123	MATH1	Evaluate and apply methods of gathering, organizing, summarizing, and analyzing data.	371.0	34.0	92%
		Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.	261.0	75.0	78%
	MATH2	Relate and apply probability theory to solve appropriate application problems.	309.0	165.0	65%
	MATH3	Demonstrate their understanding of statistical inference.	452.0	134.0	77%
	MATH4	Demonstrate the ability to use statistical software/technology.	263.0	95.0	73%

6. Historical CLO Performance Table: Mathematics- This is a chart of the table above.

			Number Met	Number Not Met	Percent Met
MATH123	MATH6	Use appropriate technologies to analyze and solve mathematical problems.	251.0	20.0	93%
MATH131	MATH1	Demonstrate a practical and conceptual understanding of a function.	99.0	25.0	80%
		Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.	56.0	24.0	70%
	MATH2	Demonstrate the ability to analyze functions using a variety of methods.	41.0	25.0	62%
	MATH3	Demonstrate knowledge of different types of functions in order to solve problems.	36.0	38.0	49%
	MATH4	Demonstrate the ability to communicate effectively about mathematics.	21.0	9.0	70%
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.	52.0	33.0	61%
MATH135	MATH1	Demonstrate the ability to analyze functions algebraically, numerically, and graphically; discuss the concept of continuity and evaluate limits.	15.0	14.0	52%
		Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.	38.0	20.0	66%
	MATH2	Demonstrate an understanding of the mathematical concept of the derivative.	27.0	5.0	84%
	MATH3	Demonstrate an understanding of the mathematical concept of integration.	22.0	3.0	88%
	MATH4	Demonstrate the ability to apply derivative and integration to formulate mathematical models and solve real world problems.	31.0	2.0	94%
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.	19.0	6.0	76%
MATH141	MATH1	Develop problem-solving and mathematical modeling skills necessary for calculus.	153.0	33.0	82%
		Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.	37.0	9.0	80%
	MATH2	Demonstrate a practical and conceptual understanding of a function including inverse functions.	169.0	22.0	88%
	MATH3	Demonstrate knowledge of linear and exponential functions.	104.0	10.0	91%
	MATH4	Demonstrate proficiency in the use of trigonometric function by way of graphing, solving and manipulating.	93.0	20.0	82%
	MATH5	Demonstrate the ability to communicate effectively about mathematics.	177.0	32.0	85%
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.	71.0	35.0	67%

6. Historical CLO Performance Table: Mathematics- This is a chart of the table above.

			Number Met	Number Not Met	Percent Met
MATH141	MATH6	Use appropriate technology to enhance mathematical thinking and understanding, to solve mathematical problems, and to judge the reasonableness of the results.	180.0	86.0	68%
MATH181	MATH1	Find limits in order to develop differentiation and integration.	104.0	36.0	74%
		Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.	29.0	4.0	88%
	MATH2	Demonstrate an understanding of continuity in order to apply the concept to other topics in calculus.	52.0	15.0	78%
	MATH3	Differentiate algebraic and trigonometric functions in order to solve applied problems.	130.0	38.0	77%
	MATH4	Solve applied problems involving differentiation.	46.0	26.0	64%
	MATH5	Use appropriate technology to enhance mathematical thinking and understanding, to solve mathematical problems, and to judge the reasonableness of the results.	76.0	83.0	48%
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.	56.0	23.0	71%
MATH182	MATH1	Find integrals and solve differential equations using analytical, numerical, and graphical techniques.	108.0	48.0	69%
		Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.	40.0	25.0	62%
	MATH2	Analyze sequences and series to determine convergence or divergence and derive Taylor series to approximate functions.	83.0	19.0	81%
	MATH3	Model and solve applied problems using integration and differential equations.	20.0	5.0	80%
	MATH4	Use appropriate technology to enhance mathematical thinking and understanding, to solve mathematical problems, and to judge the reasonableness of the results.	38.0	30.0	56%
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.	30.0	16.0	65%
MATH183	MATH1	Demonstrate a practical and conceptual understanding of vectors in 3-space.	55.0	22.0	71%
		Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.	39.0	5.0	89%
	MATH2	Demonstrate a practical and conceptual understanding of differentiation in several variables in several contexts- graphically, numerically, analytically and verbally.	74.0	20.0	79%
	MATH3	Demonstrate a practical and conceptual understanding of integrations in several contexts- graphically, numerically, analytically and verbally.	54.0	15.0	78%
	MATH4	Develop problem solving and math modeling skills.	21.0	26.0	45%
	MATH5	Use appropriate technology to enhance mathematical thinking and understanding, to solve mathematical problems, and to judge the reasonableness of the results.	39.0	3.0	93%

6. Historical CLO Performance Table: Mathematics- This is a chart of the table above.

			Number Met	Number Not Met	Percent Met
MATH183	MATH6	Use appropriate technologies to analyze and solve mathematical problems.	26.0	1.0	96%
MATH184	MATH1	Demonstrate a practical and conceptual understanding of systems of linear equations.	21.0	7.0	75%
		Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.	25.0	6.0	81%
	MATH2	Demonstrate a practical and conceptual understanding of vector spaces.	42.0	5.0	89%
	MATH3	Demonstrate a practical and conceptual understanding of linear transformations.	10.0	4.0	71%
	MATH4	Solve a variety of first order differential equations.	19.0	1.0	95%
	MATH6	Solve systems of differential equations.	42.0	8.0	84%
		Use appropriate technologies to analyze and solve mathematical problems.	8.0	3.0	73%
	MATH7	Develop problem solving and math modeling skills.	61.0	16.0	79%
MATH309	MATH1	Create and/or evaluate mathematical models that translate from real life situation/application.	91.0	38.0	71%
		Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.	14.0	10.0	58%
	MATH2	Analyze/synthesize a variety of problems and determine appropriate strategies to produce accurate results.	31.0	9.0	78%
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.	32.0	15.0	68%
MATH311	MATH1	Apply the rules of signed numbers, the order of operations agreement, and the rules for evaluating and simplifying algebraic expressions.	232.0	59.0	80%
		Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.	100.0	13.0	88%
	MATH2	Solve first degree equations and inequalities in one variable in order to solve problems that can be modeled by these relationships.	182.0	83.0	69%
	MATH3	Plot points and graph linear equations on a rectangular coordinate system to solve problems.	200.0	144.0	58%
	MATH4	Determine the equation of a given line in order to solve application problems.	67.0	71.0	49%
	MATH5	Demonstrate the ability to recognize, evaluate and simplify polynomial expression and to use factoring to solve quadratic equations.	139.0	39.0	78%
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.	75.0	26.0	74%

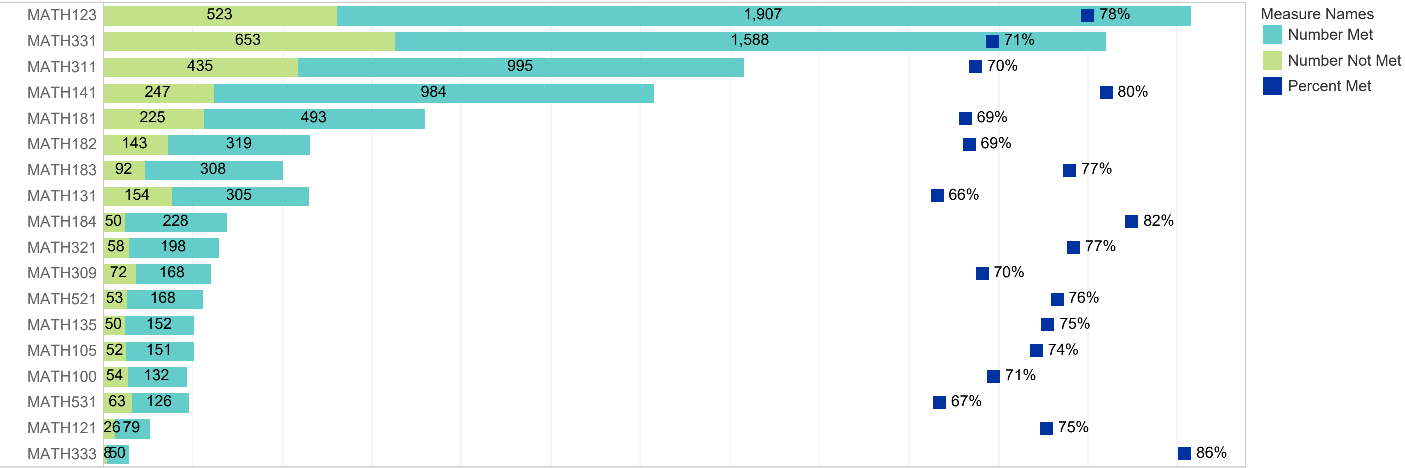
6. Historical CLO Performance Table: Mathematics- This is a chart of the table above.

			Number Met	Number Not Met	Percent Met
MATH321	MATH1	Demonstrate a practical and conceptual understanding of geometric terms, postulates and theorems.	55.0	3.0	95%
		Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.	26.0	10.0	72%
	MATH3	Develop problem solving and math modeling skills that utilize knowledge of geometric formulas or concepts to solve real world problems.	38.0	17.0	69%
	MATH4	Use appropriate geometric devices, instruments or tools to perform geometric constructions that assist with understanding properties and concepts.	44.0	11.0	80%
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.	35.0	17.0	67%
MATH331	MATH1	Demonstrate the ability to recognize, evaluate, and simplify algebraic expressions.	343.0	88.0	80%
		Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.	78.0	46.0	63%
	MATH2	Differentiate between types of equations & types of systems and apply appropriate methods to solve them.	302.0	129.0	70%
	MATH3	Graph relations & functions and demonstrate an understanding of function related concepts.	432.0	161.0	73%
	MATH4	Interpret and apply appropriate methods to solve applications.	110.0	81.0	58%
	MATH5	Solve systems of linear equations in order to solve application problems in this and related courses.	216.0	108.0	67%
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.	107.0	40.0	73%
MATH333	MATH3	Demonstrate the ability to recognize different forms of linear equations and use appropriate methods to solve them.	50.0	8.0	86%
MATH521	MATH1	Estimate and judge the reasonableness of answers.	18.0	6.0	75%
		Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.	16.0	0.0	100%
	MATH2	Perform arithmetic operations on real numbers to solve practical problems.	65.0	24.0	73%
	MATH4	Perform basic algebraic operations to simplify and evaluate expressions and to solve simple linear equations.	38.0	8.0	83%
	MATH5	Communicate effectively about mathematics.	22.0	5.0	81%
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.	9.0	10.0	47%
MATH531	MATH2	Perform arithmetic operations on real numbers to solve practical problems.	41.0	8.0	84%

6. Historical CLO Performance Table: Mathematics- This is a chart of the table above.

			Number Met	Number Not Met	Percent Met
MATH531	MATH4	Perform basic algebraic operations to simplify and evaluate expressions and to solve simple linear equations.	39.0	27.0	59%
	MATH5	Communicate effectively about mathematics.	29.0	22.0	57%
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.	17.0	6.0	74%

7. Historical Course Performance: Mathematics- This is SLO assessment by course, including percent and number of students that met standards.



8. ILO Performance Table: Mathematics- This is the ILO performance of the program for the past 6 academic years.

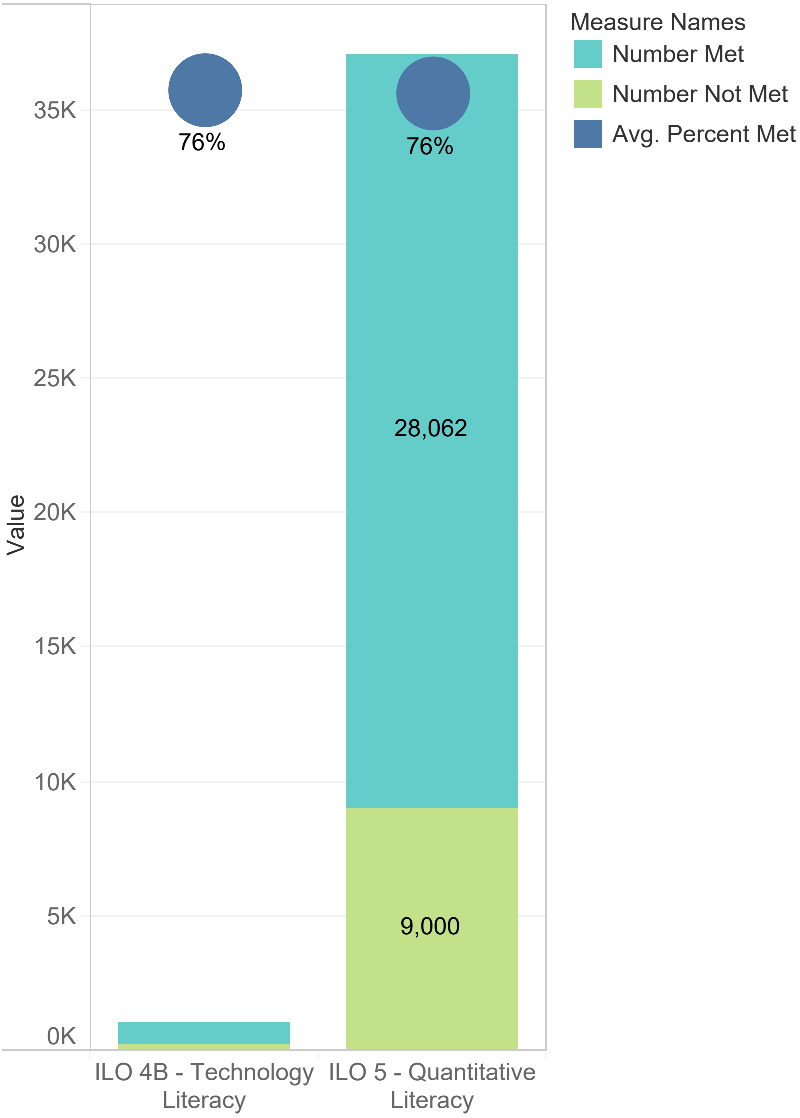
	# of Connected Courses	Avg. Percent Met
Null	0	73%
ILO 4B - Technology Literacy: Proficiency in a technology and the ability to choose the appropriate tools.	1	76%
ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems.	1	76%

8. ILO Performance Table: Mathematics- This is the ILO performance of the program for the past 6 academic years.

	Number Met	Number Not Met
Null	8,883	3,325
ILO 4B - Technology Literacy: Proficiency in a technology and the ability to choose the appropriate tools.	800	253
ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems.	28,062	9,000

9. ILO Performance Chart:

Mathematics- This is the ILO performance of the program for the past 6 academic years in a table that includes the number of courses that are connected to each ILO.



10. Historical Associations- CLOs and ILOs/PLOs: MATH- These are the CLO and ILO associations. *Note: Old: Associations from eLumen, Current: ILO Associations, and NEW: Associations made with PLO cycles post 2020.*

		Outcome ERP / Outcome								
		ILO 2	ILO 4B	ILO 5	MATH1	MATH2	MATH3	MATH4	MATH5	MATH6
		Critical Thinking & Problem Solving: Explore issues through various information sources; evaluate the credibility and significance of both the information and the source to arrive at a reasoned conclusion.	Technology Literacy: Proficiency in a technology and the ability to choose the appropriate tools.	Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems.	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.	Estimate and check mathematical results for reasonableness.	Interpret and draw inferences from mathematical models such as formulas, graphs, tables and schematics.	Represent mathematical information symbolically, visually, numerically, verbally and in writing.	Use appropriate technologies to analyze and solve mathematical problems, verify the appropriateness and reasonableness of the solutions(s).	Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus.
MATH	Check mathematical results for reasonableness.	X		X						
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..		X	X						
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.			X						
	Represent mathematical information symbolically, graphically, numerically, and in writing.			X						
	SLO 5 Check mathematical results for reasonableness.			X						
	Use appropriate technologies to analyze and solve mathematical problems.		X	X						
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.			X						
MATH100	Check mathematical results for reasonableness.					X				
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..			X	X					
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.			X			X			
	Represent mathematical information symbolically, graphically, numerically, and in writing.			X				X		
	Use appropriate technologies to analyze and solve mathematical problems.		X						X	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	X								X
MATH105	Check mathematical results for reasonableness.	X				X				
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..		X		X					
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.			X			X			
	Represent mathematical information symbolically, graphically, numerically, and in writing.			X				X		
	Use appropriate technologies to analyze and solve mathematical problems.			X					X	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.			X						X
MATH121	Check mathematical results for reasonableness.					X				
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..				X					
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.						X			
	Represent mathematical information symbolically, graphically, numerically, and in writing.	X						X		
	Use appropriate technologies to analyze and solve mathematical problems.								X	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.			X						X
MATH123	Check mathematical results for reasonableness.					X				
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..				X					
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.						X			
	No Mapping									
	Represent mathematical information symbolically, graphically, numerically, and in writing.							X		
	Use appropriate technologies to analyze and solve mathematical problems.								X	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.									X
MATH123S	No Mapping									
MATH131	Check mathematical results for reasonableness.					X				
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..					X				
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.						X			
	No Mapping									
	Represent mathematical information symbolically, graphically, numerically, and in writing.							X		
	Use appropriate technologies to analyze and solve mathematical problems.								X	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.									X
MATH131S	No Mapping									
MATH135	Check mathematical results for reasonableness.					X				
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..				X					
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.						X			
	No Mapping									
	Represent mathematical information symbolically, graphically, numerically, and in writing.							X		
	Use appropriate technologies to analyze and solve mathematical problems.								X	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.									X
MATH135S	No Mapping									

10. Historical Associations- CLOs and ILOs/PLOs: MATH- These are the CLO and ILO associations. *Note: Old: Associations from eLumen, Current: ILO Associations, and NEW: Associations made with PLO cycles post 2020.*

		Outcome ERP / .. No Mapping
		No Mapping
MATH	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	SLO 5 Check mathematical results for reasonableness.	
	Use appropriate technologies to analyze and solve mathematical problems.	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	
MATH100	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	Use appropriate technologies to analyze and solve mathematical problems.	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	
MATH105	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	Use appropriate technologies to analyze and solve mathematical problems.	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	
MATH121	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	Use appropriate technologies to analyze and solve mathematical problems.	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	
MATH123	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	No Mapping	**No Mapping**
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	Use appropriate technologies to analyze and solve mathematical problems.	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	
MATH123S	No Mapping	**No Mapping**
MATH131	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	No Mapping	**No Mapping**
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	Use appropriate technologies to analyze and solve mathematical problems.	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	
MATH131S	No Mapping	**No Mapping**
MATH135	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	No Mapping	**No Mapping**
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	Use appropriate technologies to analyze and solve mathematical problems.	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	
MATH135S	No Mapping	**No Mapping**

10. Historical Associations- CLOs and ILOs/PLOs: MATH- These are the CLO and ILO associations. *Note: Old: Associations from eLumen, Current: ILO Associations, and NEW: Associations made with PLO cycles post 2020.*

		Outcome ERP / Outcome								
		ILO 2	ILO 4B	ILO 5	MATH1	MATH2	MATH3	MATH4	MATH5	MATH6
		Critical Thinking & Problem Solving: Explore issues through various information sources; evaluate the credibility and significance of both the information and the source to arrive at a reasoned conclusion.	Technology Literacy: Proficiency in a technology and the ability to choose the appropriate tools.	Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems.	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.	Estimate and check mathematical results for reasonableness.	Interpret and draw inferences from mathematical models such as formulas, graphs, tables and schematics.	Represent mathematical information symbolically, visually, numerically, verbally and in writing.	Use appropriate technologies to analyze and solve mathematical problems, verify the appropriateness and reasonableness of the solutions(s).	Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus.
MATH141	Check mathematical results for reasonableness.					X				
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..				X					
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.						X			
	No Mapping									
	Represent mathematical information symbolically, graphically, numerically, and in writing.							X		
	Use appropriate technologies to analyze and solve mathematical problems.								X	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.									X
MATH141S	No Mapping									
MATH181	Check mathematical results for reasonableness.					X				
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..					X				
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.						X			
	No Mapping									
	Represent mathematical information symbolically, graphically, numerically, and in writing.							X		
	Use appropriate technologies to analyze and solve mathematical problems.								X	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.									X
MATH182	Check mathematical results for reasonableness.					X				
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..				X					
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.						X			
	No Mapping									
	Represent mathematical information symbolically, graphically, numerically, and in writing.							X		
	Use appropriate technologies to analyze and solve mathematical problems.								X	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.									X
MATH183	Check mathematical results for reasonableness.					X				
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..				X					
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.						X			
	No Mapping									
	Represent mathematical information symbolically, graphically, numerically, and in writing.							X		
	Use appropriate technologies to analyze and solve mathematical problems.								X	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.									X
MATH184	Check mathematical results for reasonableness.					X				
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..				X					
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.						X			
	No Mapping									
	Represent mathematical information symbolically, graphically, numerically, and in writing.							X		
	Use appropriate technologies to analyze and solve mathematical problems.								X	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.									X
MATH309	Check mathematical results for reasonableness.					X				
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..				X					
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.						X			
	No Mapping									
	Represent mathematical information symbolically, graphically, numerically, and in writing.							X		
	Use appropriate technologies to analyze and solve mathematical problems.								X	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.									X
MATH311	Check mathematical results for reasonableness.					X				
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..				X					
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.						X			
	No Mapping									
	Represent mathematical information symbolically, graphically, numerically, and in writing.							X		
	Use appropriate technologies to analyze and solve mathematical problems.								X	

10. Historical Associations- CLOs and ILOs/PLOs: MATH- These are the CLO and ILO associations. *Note: Old: Associations from eLumen, Current: ILO Associations, and NEW: Associations made with PLO cycles post 2020.*

		Outcome ERP / .. No Mapping
		No Mapping
MATH141	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	No Mapping	No Mapping
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	Use appropriate technologies to analyze and solve mathematical problems.	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	
MATH141S	No Mapping	No Mapping
MATH181	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	No Mapping	No Mapping
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	Use appropriate technologies to analyze and solve mathematical problems.	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	
MATH182	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	No Mapping	No Mapping
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	Use appropriate technologies to analyze and solve mathematical problems.	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	
MATH183	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	No Mapping	No Mapping
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	Use appropriate technologies to analyze and solve mathematical problems.	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	
MATH184	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	No Mapping	No Mapping
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	Use appropriate technologies to analyze and solve mathematical problems.	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	
MATH309	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	No Mapping	No Mapping
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	Use appropriate technologies to analyze and solve mathematical problems.	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	
MATH311	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	No Mapping	No Mapping
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	Use appropriate technologies to analyze and solve mathematical problems.	

10. Historical Associations- CLOs and ILOs/PLOs: MATH- These are the CLO and ILO associations. *Note: Old: Associations from eLumen, Current: ILO Associations, and NEW: Associations made with PLO cycles post 2020.*

		Outcome ERP / Outcome								
		ILO 2	ILO 4B	ILO 5	MATH1	MATH2	MATH3	MATH4	MATH5	MATH6
		Critical Thinking & Problem Solving: Explore issues through various information sources; evaluate the credibility and significance of both the information and the source to arrive at a reasoned conclusion.	Technology Literacy: Proficiency in a technology and the ability to choose the appropriate tools.	Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems.	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.	Estimate and check mathematical results for reasonableness.	Interpret and draw inferences from mathematical models such as formulas, graphs, tables and schematics.	Represent mathematical information symbolically, visually, numerically, verbally and in writing.	Use appropriate technologies to analyze and solve mathematical problems, verify the appropriateness and reasonableness of the solutions(s).	Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus.
MATH311	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.									X
MATH313	Check mathematical results for reasonableness.					X				
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..				X					
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.						X			
	Represent mathematical information symbolically, graphically, numerically, and in writing.							X		
	Use appropriate technologies to analyze and solve mathematical problems.								X	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.									X
MATH314	Check mathematical results for reasonableness.					X				
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..				X					
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.						X			
	Represent mathematical information symbolically, graphically, numerically, and in writing.							X		
	Use appropriate technologies to analyze and solve mathematical problems.								X	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.									X
MATH321	Check mathematical results for reasonableness.					X				
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..				X					
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.						X			
	No Mapping									
	Represent mathematical information symbolically, graphically, numerically, and in writing.							X		
	Use appropriate technologies to analyze and solve mathematical problems.								X	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.									X
MATH331	Check mathematical results for reasonableness.					X				
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..				X					
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.						X			
	No Mapping									
	Represent mathematical information symbolically, graphically, numerically, and in writing.							X		
	Use appropriate technologies to analyze and solve mathematical problems.								X	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.									X
MATH331S	No Mapping									
MATH333	Check mathematical results for reasonableness.					X				
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..				X					
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.						X			
	Represent mathematical information symbolically, graphically, numerically, and in writing.							X		
	Use appropriate technologies to analyze and solve mathematical problems.								X	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.									X
MATH334	Check mathematical results for reasonableness.					X				
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..				X					
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.						X			
	Represent mathematical information symbolically, graphically, numerically, and in writing.							X		
	Use appropriate technologies to analyze and solve mathematical problems.								X	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.									X
MATH521	Check mathematical results for reasonableness.					X				
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..				X					
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.						X			
	No Mapping									
	Represent mathematical information symbolically, graphically, numerically, and in writing.							X		
	Use appropriate technologies to analyze and solve mathematical problems.								X	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.									X
MATH531	Check mathematical results for reasonableness.					X				
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..				X					

10. Historical Associations- CLOs and ILOs/PLOs: MATH- These are the CLO and ILO associations. *Note: Old: Associations from eLumen, Current: ILO Associations, and NEW: Associations made with PLO cycles post 2020.*

		Outcome ERP / .. No Mapping
		No Mapping
MATH311	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	
MATH313	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	Use appropriate technologies to analyze and solve mathematical problems.	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	
MATH314	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	Use appropriate technologies to analyze and solve mathematical problems.	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	
MATH321	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	No Mapping	**No Mapping**
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	Use appropriate technologies to analyze and solve mathematical problems.	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	
MATH331	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	No Mapping	**No Mapping**
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	Use appropriate technologies to analyze and solve mathematical problems.	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	
MATH331S	No Mapping	**No Mapping**
MATH333	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	Use appropriate technologies to analyze and solve mathematical problems.	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	
MATH334	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	Use appropriate technologies to analyze and solve mathematical problems.	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	
MATH521	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	
	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	No Mapping	**No Mapping**
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	Use appropriate technologies to analyze and solve mathematical problems.	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	
MATH531	Check mathematical results for reasonableness.	
	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and ..	

10. Historical Associations- CLOs and ILOs/PLOs: MATH- These are the CLO and ILO associations. *Note: Old: Associations from eLumen, Current: ILO Associations, and NEW: Associations made with PLO cycles post 2020.*

		Outcome ERP / Outcome								
		ILO 2	**ILO 4B**	**ILO 5**	**MATH1**	**MATH2**	**MATH3**	**MATH4**	**MATH5**	**MATH6**
		Critical Thinking & Problem Solving: Explore issues through various information sources; evaluate the credibility and significance of both the information and the source to arrive at a reasoned conclusion.	Technology Literacy: Proficiency in a technology and the ability to choose the appropriate tools.	Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems.	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.	Estimate and check mathematical results for reasonableness.	Interpret and draw inferences from mathematical models such as formulas, graphs, tables and schematics.	Represent mathematical information symbolically, visually, numerically, verbally and in writing.	Use appropriate technologies to analyze and solve mathematical problems, verify the appropriateness and reasonableness of the solutions(s).	Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus.
MATH531	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.						X			
	Represent mathematical information symbolically, graphically, numerically, and in writing.							X		
	Use appropriate technologies to analyze and solve mathematical problems.								X	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.									X

10. Historical Associations- CLOs and ILOs/PLOs: MATH- These are the CLO and ILO associations. *Note: Old: Associations from eLumen, Current: ILO Associations, and NEW: Associations made with PLO cycles post 2020.*

		Outcome ERP / .. No Mapping
		No Mapping
MATH531	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
	Represent mathematical information symbolically, graphically, numerically, and in writing.	
	Use appropriate technologies to analyze and solve mathematical problems.	
	Utilize a variety of problem solving techniques and strategies to identify, analyze and solve problems.	

11. Historical Associations ILO/PLO: MATH- These are the Course and ILO associations. *Note: Old: Associations from eLumen, Current: ILO Associations, and NEW: Associations made with PLO cycles post 2020.*

	No Map..	ILO 2	ILO 4B	ILO 5	MATH1	MATH2	MATH3
	No Mapping	Critical Thinking & Problem Solving: Explore issues through various information sources; evaluate the credibility and significance of both the information and the source to arrive at a reasoned conclusion.	Technology Literacy: Proficiency in a technology and the ability to choose the appropriate tools.	Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems.	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.	Estimate and check mathematical results for reasonableness.	Interpret and draw inferences from mathematical models such as formulas, graphs, tables and schematics.
MATH		X	X	X			
MATH100		X	X	X	X	X	X
MATH105		X	X	X	X	X	X
MATH121		X		X	X	X	X
MATH123	No Mapping				X	X	X
MATH123S	No Mapping						
MATH131	No Mapping					X	X
MATH131S	No Mapping						
MATH135	No Mapping				X	X	X
MATH135S	No Mapping						
MATH141	No Mapping				X	X	X
MATH141S	No Mapping						
MATH181	No Mapping					X	X
MATH182	No Mapping				X	X	X
MATH183	No Mapping				X	X	X
MATH184	No Mapping				X	X	X
MATH309	No Mapping				X	X	X
MATH311	No Mapping				X	X	X
MATH313					X	X	X
MATH314					X	X	X
MATH321	No Mapping				X	X	X
MATH331	No Mapping				X	X	X
MATH331S	No Mapping						
MATH333					X	X	X
MATH334					X	X	X
MATH521	No Mapping				X	X	X
MATH531					X	X	X

11. Historical Associations ILO/PLO: MATH- These are the Course and ILO associations. *Note: Old: Associations from eLumen, Current: ILO Associations, and NEW: Associations made with PLO cycles post 2020.*

	MATH4 Represent mathematical information symbolically, visually, numerically, verbally and in writing.	MATH5 Use appropriate technologies to analyze and solve mathematical problems, verify the appropriateness and reasonableness of the solutions(s).	MATH6 Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus.
MATH			
MATH100	X	X	X
MATH105	X	X	X
MATH121	X	X	X
MATH123	X	X	X
MATH123S			
MATH131	X	X	X
MATH131S			
MATH135	X	X	X
MATH135S			
MATH141	X	X	X
MATH141S			
MATH181	X	X	X
MATH182	X	X	X
MATH183	X	X	X
MATH184	X	X	X
MATH309	X	X	X
MATH311	X	X	X
MATH313	X	X	X
MATH314	X	X	X
MATH321	X	X	X
MATH331	X	X	X
MATH331S			
MATH333	X	X	X
MATH334	X	X	X
MATH521	X	X	X
MATH531	X	X	X

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Fall 2014	MATH123 - Elementary Statistics	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	More emphasis will be given on two-way table questions that require a different application of basic probability rules.
		What did the assessment data indicate about the strengths of your course?	Students were unaware of the embedded assessment questions on the final exam and possibly decided to neglect the two-way probability problems in their studies.
		What did the assessment data indicate about the weaknesses of your course?	Students had difficulties applying probability rules to two-way table problems.
	MATH131 - College Algebra	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	More emphasis will be given on modeling problems in the course.
		What did the assessment data indicate about the strengths of your course?	The students demonstrated a basic understanding of the concept of a function.
		What did the assessment data indicate about the weaknesses of your course?	Students had difficulties applying formulas to applications.
	MATH181 - Calculus 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	Continue practice with theorem based applications.
		What did the assessment data indicate about the strengths of your course?	Students demonstrated a good understanding of limits.
		What did the assessment data indicate about the weaknesses of your course?	Students had difficulties with the more abstract aspect of limits.
	MATH333 - Algebra 2: Part 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	N/A
		What did the assessment data indicate about the strengths of your course?	84% of 33 students who took the final exam scored 2 or 3 on three embedded questions on the final exam that assessed performance on Course SLO 3: Demonstrate the ability to recognize different forms of linear equations use appropriate methods to solve them and solve applications.
		What did the assessment data indicate about the weaknesses of your course?	N/A
Fall 2015	MATH100 - Nature of Modern Mathematics	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No changes planned.
		What did the assessment data indicate about the strengths of your course?	For SLO #2, 70% of the students either met or exceeded the standard. For SLO #4, 90% of the students either met or exceeded the standard. No changes needed.
		What did the assessment data indicate about the weaknesses of your course?	No weaknesses.
	MATH105 - Mathematics for Teachers	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	Include more group work to make them speak mathematics.
		What did the assessment data indicate about the strengths of your course?	Students' critical thinking was improved.
		What did the assessment data indicate about the weaknesses of your course?	I feel the prerequisite for this course should be higher than algebra 2. I feel students don't have the maturity in math.
	MATH121 - Trigonometry	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	We might want to spend a little less time on the six trig ratios and more time on other topics that might be more challenging.
		What did the assessment data indicate about the strengths of your course?	The students appear to have mastered this SLO with 100% at or above the standard.

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

	MATH121 - Trigonometry	What did the assessment data indicate about the weaknesses of your course?	No weakness apparent.
	MATH123 - Elementary Statistics	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	Based on the data, the on-line course needs to change to be more interactive with the students. If the students are interacting more with each other and with the teacher, then they will be more successful in the course. For the in-person classes, teachers will continue to stress the importance of knowing which hypothesis test is appropriate based on the context of the problem. Teachers will also continue to have students prove normality for each hypothesis test (where a..
		What did the assessment data indicate about the strengths of your course?	The assessment data showed that (of the teachers who entered data), 69.1% of their students met or exceeded the standard. Since our goal is 70%, we were very close to meeting the goal. One of the strengths stated for the on-line course was that students who tried, were very successful. One teacher observed that 95% of their class met or exceeded the standard, so their class showed great understanding of the appropriate hypothesis test to use, understoo..
		What did the assessment data indicate about the weaknesses of your course?	The comments on the weaknesses of the course were varied according to the responding teachers. Some teachers felt that their students had no clue about inference when taught in an on-line setting. For the teachers who taught in-person courses, the students seemed to be overall very successful, but a few minor weakness did come across. A few teachers mentioned that a few students misinterpreted one of the questions and another teacher stated that the weakn..
	MATH131 - College Algebra	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	We will continue to focus on logarithmic concepts in concrete and abstract terms. We are planning to give more quizzes so that the students will have a better understanding of the content.
		What did the assessment data indicate about the strengths of your course?	All students were encouraged to do their best in answering the given question and they tried to solve the problem despite the challenging obstacles that were present.
		What did the assessment data indicate about the weaknesses of your course?	Students had difficulties with the abstract representation of a logarithmic equation. Also, students demonstrated a weakness in algebraic procedures.
	MATH135 - Calculus with Applications	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No need more changes at this time.
		What did the assessment data indicate about the strengths of your course?	Students seem to have a pretty good understanding of the derivative.
		What did the assessment data indicate about the weaknesses of your course?	No major weakness apparent.
	MATH141 - Precalculus	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	I have not made any changes. I will continue to do the same way I did last semester.
		What did the assessment data indicate about the strengths of your course?	It seems like most students know how to do the problem.
		What did the assessment data indicate about the weaknesses of your course?	N/A
	MATH181 - Calculus 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	We will continue to emphasize appropriate notation and more conceptual problems on derivatives will be included in homework assignments.
		What did the assessment data indicate about the strengths of your course?	The students demonstrated a good understanding of differentiation techniques for algebraic and trigonometric functions. Also, the students had a nice understanding the appropriate notation for differentiation.
		What did the assessment data indicate about the weaknesses of your course?	Some of the students had difficulty with the geometric interpretation of the derivative.
	MATH182 - Calculus 2	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	CSLOs & questions testing CSLOs need to be reconsidered & rewritten. Faculty participation, cooperation, & uniformity in assessment process needs to somehow be encouraged. Care must be taken when interpreting any/all CSLO data.
		What did the assessment data indicate about the strengths of your course?	CSLOs & questions testing CSLOs need to be reconsidered & rewritten. Faculty participation, cooperation, & uniformity in assessment process needs to somehow be encouraged. Care must be taken when interpreting any/all CSLO data.
		What did the assessment data indicate about the weaknesses of your course?	CSLOs & questions testing CSLOs need to be reconsidered & rewritten. Faculty participation, cooperation, & uniformity in assessment process needs to somehow be encouraged. Care must be taken when interpreting any/all CSLO data.
Fall 2015	MATH183 - Multivariable Calculus	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	CSLOs & questions testing CSLOs need to be reconsidered & rewritten. Faculty participation, cooperation, & uniformity in assessment process needs to somehow be encouraged. Care must be taken when interpreting any/all CSLO data.

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Term	Course	Question	Response
Fall 2015	MATH183 - Multivariable Calculus	What did the assessment data indicate about the strengths of your course?	CSLOs & questions testing CSLOs need to be reconsidered & rewritten. Faculty participation, cooperation, & uniformity in assessment process needs to somehow be encouraged. Care must be taken when interpreting any/all CSLO data.
		What did the assessment data indicate about the weaknesses of your course?	CSLOs & questions testing CSLOs need to be reconsidered & rewritten. Faculty participation, cooperation, & uniformity in assessment process needs to somehow be encouraged. Care must be taken when interpreting any/all CSLO data.
	MATH184 - Linear Algebra Diff Equations	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No changes needed at this time.
		What did the assessment data indicate about the strengths of your course?	Students seem to understand the SLO we assessed this semester.
		What did the assessment data indicate about the weaknesses of your course?	No weakness evident from this SLO.
	MATH189 - Independent Projects	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH311 - Algebra 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	The SLO itself is about graphing so several faculty asked that the question be considered. Others commented that they would make up worksheets or warm-ups to help students practice linear modeling. Either the book needs to be changed (so that this topic is covered) or the SLO and the question need to be rewritten.
		What did the assessment data indicate about the strengths of your course?	Some faculty reported that students could graph in slope-intercept form although the question started as a word problem. Many students could predict a value and interpret the word problem.
		What did the assessment data indicate about the weaknesses of your course?	Several faculty commented that not enough time is spent on this topic and that students don't understand basic ideas like scaling and labeling. One faculty commented that less than 50% of their students scored a 2 or 3, partially because linear modeling in the context of word problems is not covered in the book. Also students struggled with writing the equation. One faculty mentioned that students are used to having their hands held at each step so may not be able to ..
	MATH313 - Algebra 1: Part 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH314 - Algebra 1: Part 2	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH321 - First Year Geometry	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	I need to be more assertive with the students who are not doing what is needed to succeed in this course. I literally beg the students to see me for help or to use the Math Center and Tutorial Center but I clearly need to do more. I need to question them about their behavior and motivate them to be more engaged in the class.
		What did the assessment data indicate about the strengths of your course?	I taught both sections of this course. One section met the standard while one section did not. The section that did not meet the standard had many students who did not attend class on a regular basis, did not participate in group discussions, and/or did not do a lot of the homework assignments. I expected this section to not meet the standard. However, both sections together averaged a 69% rate. Also, almost all (but one) of the students who met the standard..
		What did the assessment data indicate about the weaknesses of your course?	The weakness of this course is the fact that many students are not attending class regularly, not participating or being prepared for the group discussions, and not doing the homework.

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Term	Course	Question	Response
Fall 2015	MATH331 - Algebra 2	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	Spend more time of the course in discussing the concepts of functions and graphing. It would be needed different textbooks that address these topics with more extent than our current text. Another needed resource would be the availability of a set of graphing calculators for each instructor that teaches Math 331.
		What did the assessment data indicate about the strengths of your course?	Students are proficient in evaluating a function f(x) at a given value of x. Students are proficient in generating a table of values for a function.
		What did the assessment data indicate about the weaknesses of your course?	Students do not really understand the concept of function since too many of them could not solve the equation f(x)=4, and instead, they substituted x by 4 into the formula for f(x).
	MATH333 - Algebra 2: Part 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH334 - Algebra 2: Part 2	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH521 - Foundations of Mathematics	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	Provide more practice for students to use arithmetic in practical situations. Emphasis needs to be given to helping students decide what methods are used for particular situations. Focus on general types and specific words which help to identify the different types.
		What did the assessment data indicate about the strengths of your course?	Many students are able to solve practical problems using various arithmetic operations.
		What did the assessment data indicate about the weaknesses of your course?	Some students are still not able to apply arithmetic operations to everyday situations.
	MATH531 - Pre-Algebra	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	Not done
		What did the assessment data indicate about the strengths of your course?	Not done
		What did the assessment data indicate about the weaknesses of your course?	Not done
Fall 2016	MATH100 - Nature of Modern Mathematics	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	I will need to emphasize over and over again what a frequency table is presenting and continue to encourage students to try to understand the processes of finding a median, a percentile and a mean instead of just memorizing the steps.
		What did the assessment data indicate about the strengths of your course?	The students did very poorly on the assessment but did best at finding the standard deviation of some given data.
		What did the assessment data indicate about the weaknesses of your course?	The students had the most difficulty finding medians, percentiles and means of data presented in a frequency table. They seemed to have particular difficulty understanding how to find medians, percentiles and means working with a frequency table as opposed to working with a list of data.
	MATH105 - Mathematics for Teachers	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	At this time, none.
		What did the assessment data indicate about the strengths of your course?	A very average class if i consider students' performance. What I believe is that "critical thinking" of EVERY student has improved.

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

	MATH105 - Mathematics for Teachers	What did the assessment data indicate about the weaknesses of your course?	Not a high enough pre-requisite!
	MATH121 - Trigonometry	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	Additional emphasis in class will be on notation and symbolism with trigonometric expressions.
		What did the assessment data indicate about the strengths of your course?	The students seemed to have a good understanding of solving trigonometric equations and applications to oblique triangles.
		What did the assessment data indicate about the weaknesses of your course?	Students appeared to have difficulties with trigonometric vocabulary and concepts.
	MATH123 - Elementary Statistics	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	In order to improve their course, teachers mentioned that they will need to review class width throughout the semester, the shape of a Pareto chart, and the differences between cumulative and relative frequency. Another teacher stated that they would like to incorporate more cumulative review throughout the semester. There were several teachers that mentioned that they felt that no changes were necessary based on the successful scores that their students received...
		What did the assessment data indicate about the strengths of your course?	The assessment data showed that (of the teacher who entered data), 89.54% of their students met or exceeded the standard. Since our goal is 70%, we were above and beyond the goal. One of the strengths stated for several people was that the students were good at extending the frequency table. There were a few teachers that commented that students did very well on detecting the different methods of data collection. Several teachers were impressed with thei..
		What did the assessment data indicate about the weaknesses of your course?	The comments on the weaknesses of the course were varied according to the responding teachers. The common threads related to students not remembering that they must round to the next whole number to accurately calculate the class width. A couple of teachers mentioned that students did not remember that Pareto charts have bars that must be in decreasing order. Another teacher mentioned that students mixed up relative frequency and cumulative frequency. ..
	MATH131 - College Algebra	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	I will continue to stress the importance of algebraic procedures.
		What did the assessment data indicate about the strengths of your course?	The students seemed to understand the concept of the domain of a function.
		What did the assessment data indicate about the weaknesses of your course?	The students not always performed algebraic operations correctly.
	MATH135 - Calculus with Applications	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	I would not make any change.
		What did the assessment data indicate about the strengths of your course?	It seems like students understood the material.
		What did the assessment data indicate about the weaknesses of your course?	N/A
	MATH141 - Precalculus	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	From the report, 63.64% shows that the institutional exceeds standard and 20.66% shows that the institutional meets standard. Since only 15. 70% shows the institutional below standard, overall the course is doing great so I would not make any changes at this time.
		What did the assessment data indicate about the strengths of your course?	From the report, 63.64% shows that the institutional exceeds standard and 20.66% shows that the institutional meets standard. 84.3% showed that the course either exceeded or met the standard. Overall, the course is doing great based on this data.
		What did the assessment data indicate about the weaknesses of your course?	Since 15. 70% shows the institutional below standard, there is no assessment data indicate about the weakness of the course.
	MATH181 - Calculus 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	Additional exercises will be presented on the evaluation of limits using algebra.
		What did the assessment data indicate about the strengths of your course?	The students seemed to have a good understanding of the algebra necessary for evaluating a basic limit form.
		What did the assessment data indicate about the weaknesses of your course?	Some of the students may have had difficulties with algebraic manipulation.
Fall 2016	MATH182 - Calculus 2	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	Reevaluation of course SLOs & problems recommended

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Fall 2016	MATH182 - Calculus 2	What did the assessment data indicate about the strengths of your course?	Reevaluation of course SLOs & problems recommended
		What did the assessment data indicate about the weaknesses of your course?	Reevaluation of course SLOs & problems recommended
	MATH183 - Multivariable Calculus	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	We need to keep working on math modeling at all levels of our curriculum.
		What did the assessment data indicate about the strengths of your course?	If students could build the function properly then they were generally successful at optimizing it using the method of Legrange Multipliers.
		What did the assessment data indicate about the weaknesses of your course?	Students struggle at setting up the function, i.e. the mathematical modeling component. Sadly, the modeling in this problem was really at the Precalculus level.
	MATH184 - Linear Algebra Diff Equations	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	Course text has been changed to be more in line with Cal Poly SLO (beginning Spring 2017). The text is much more concise and has a much wider selection of problems. Future data should indicate this change.
		What did the assessment data indicate about the strengths of your course?	Course text has been changed to be more in line with Cal Poly SLO (beginning Spring 2017). The text is much more concise and has a much wider selection of problems. Future data should indicate this change.
		What did the assessment data indicate about the weaknesses of your course?	Course text has been changed to be more in line with Cal Poly SLO (beginning Spring 2017). The text is much more concise and has a much wider selection of problems. Future data should indicate this change.
	MATH189 - Independent Projects	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH309 - Algebra and Math Literacy	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	Faculty want to increase the number of chances student have to practice these tasks, including the various forms. Suggestions include homework, worksheets, quizzes, having a "notes" page for class.
		What did the assessment data indicate about the strengths of your course?	Students did get practice with modeling. Some-most were able to write models.
		What did the assessment data indicate about the weaknesses of your course?	Generally students understood modeling. Ensuring that student acquire the skill, particularly finding the multiplier or using the correct form remains the biggest concern.
	MATH311 - Algebra 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	Faculty had a variety of changes they would make. Some felt no change was needed and emphasized reminding students that learning math takes time, "Much like playing the piano, math takes engagement and practice to master the skill." Others pointed out the need for access to technology, textbooks and the math center. Positive changes that seemed to help include having students work together and help each other. A need to provide more practice and plan ..
		What did the assessment data indicate about the strengths of your course?	Overall students did well on this item. Most faculty were pleased with how well their students did. One faculty did comment about the importance of doing homework. Another pointed out the importance of this idea for the next class.
		What did the assessment data indicate about the weaknesses of your course?	Students seem to have committed a variety of errors. Some students struggled with the correct operation (multiplication instead of addition), illegal squaring of a binomial, signed number arithmetic and when to use which exponent rules. The lack of motivation was cited as one struggle for students, which resulted in lower scores.
	MATH313 - Algebra 1: Part 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Term	Course	Question	Response
Fall 2016	MATH314 - Algebra 1: Part 2	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH321 - First Year Geometry	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No changes planned.
		What did the assessment data indicate about the strengths of your course?	Over 93% of the students either met or exceeded the standard so they are very good at applying definitions, postulates and theorems to solve problems.
		What did the assessment data indicate about the weaknesses of your course?	No weaknesses shown.
	MATH331 - Algebra 2	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	3. Faculty think: more practice with decimal, asses sooner after the topic was taught, changing from MyMathLab to other programs, more time and more practice than usual to the topic, modifying the question so that it is easier for the students, put more emphasis on understanding the topic.
		What did the assessment data indicate about the strengths of your course?	1. Faculty felt that students did well with the systems of equations. Most were pleased with the results, particularly because this topic is taught early in the semester.
		What did the assessment data indicate about the weaknesses of your course?	2. The challenges included decimal arithmetic and setting up the system correctly. Another concern was the number of students who stopped participating or doing work.
	MATH333 - Algebra 2: Part 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH334 - Algebra 2: Part 2	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH521 - Foundations of Mathematics	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	Add more activities to promote understanding and provide practice in solving equations.
		What did the assessment data indicate about the strengths of your course?	Most of the students that stayed through the semester were able to perform basic algebraic operations. The use of online software such as Khan Academy or ALEKS helps students develop mastery.
		What did the assessment data indicate about the weaknesses of your course?	Many students did not demonstrate proficiency in solving basic equations. They do not understand the process of undoing the operations. More practice is always needed.
	MATH531 - Pre-Algebra	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	If the SLO must be assessed at the end of the semester then I will look to spiral material through my assessments. Continue with current lessons and assignments.
		What did the assessment data indicate about the strengths of your course?	Students who did well in the class also performed well on the SLO. Most students were able to demonstrate proficiency in evaluating algebraic expressions and solving basic equations.

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Fall 201[illegible]	MATH531 - Pre-Algebra	What did the assessment data indicate about the weaknesses of your course?	A few students were unable to correctly complete this task. It would be worthwhile to spiral material through assessments since SLO's are assessed at the end of the semester.
	MATH100 - Nature of Modern Mathematics	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH105 - Mathematics for Teachers	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH121 - Trigonometry	Any other comments?	NA
		What changes have you made/do you plan to make based on the data?	I will continue to emphasize basic vocabulary and trigonometric notation. Additional practice is needed by the students in class and outside of class.
		What did the assessment data indicate about the strengths of your course?	The course did focus on symbolism and different representations of trigonometric ideas.
		What did the assessment data indicate about the weaknesses of your course?	The students did not have a good grasp of concrete trigonometric relationships.
		What resources are required to make these changes or to maintain your progress?	In the future, I will prepare more exercises for the students to work on in class.
	MATH123 - Elementary Statistics	Any other comments?	One teacher commented that they would like to use Canvas more. They stated that it would be nice if instructors share their course in the Canvas Commons so that the course becomes more unified across the department. The teacher would also like to share assignments with other department members through Canvas. One teacher commented that they like the assessments and find value in administering the SLO assessment each semester.
		What changes have you made/do you plan to make based on the data?	In order to improve their course, teachers mentioned that they will need to remind students how to check their answers with the calculator, change the number of questions on the final exam to allow more time on each question, go over the steps of the hypothesis test more, explain the differences between the P-value method and Rejection Region method, and stress the importance of the inequality symbol when doing the Rejection Region method. One teacher mentioned ..
		What did the assessment data indicate about the strengths of your course?	The assessment data showed that (of the teacher who entered data), 81.47% of their students met or exceeded the standard. Since our goal is 70%, we were well above the goal. Almost every teacher who responded, stated that students demonstrated an understanding of hypothesis testing. Several teachers commented that the standards were efficiently taught, that students understood key points, and that only minor mistakes were made.
Fall 2017		What did the assessment data indicate about the weaknesses of your course?	The comments on the weaknesses of the course were varied according to the responding teachers. Some of the teachers mentioned that their students mixed up the order of operations, mixed up their inequality symbols when comparing the standardized test statistic to the critical value, mixed up the way to verify normality on a 2 sample proportion hypothesis test with a 2 sample proportion confidence interval. One teacher mentioned that 1/3 of their clas..

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

MATH123 - Elementary Statistics	What resources are required to make these changes or to maintain your progress?	There are several resources that will be required to make the changes stated above, as well as to maintain our progress. These resources include: Textbooks, Graphing Calculators such as TI 83/84, Math Center, Math Center Tutors, Technology in Classroom, Faculty, Math Center Coordinator, Math Center Coordinator Assistant, and Math Center Expansion. Each of these items is explained in more detail below...
MATH131 - College Algebra	Any other comments?	None
	What changes have you made/do you plan to make based on the data?	Increase student participation in class. More examples about maximum and minimum value need to be added.
	What did the assessment data indicate about the strengths of your course?	Students are competent in using proper technology.
	What did the assessment data indicate about the weaknesses of your course?	Students didn't seem to know how to interpret the information that they found using technology.
	What resources are required to make these changes or to maintain your progress?	None
MATH135 - Calculus with Applications	Any other comments?	I do not know why the result is not good but we can think any other way to reach the institutional standard in the future.
	What changes have you made/do you plan to make based on the data?	No change at this moment.
	What did the assessment data indicate about the strengths of your course?	Based on the data, more than 50% of students meet or exceed the institutional standards. It doesn't seem like all students are comprehending the material in class but it is hard to say that students are doing poorly in class.
	What did the assessment data indicate about the weaknesses of your course?	Since the percentage of "Institutional Below Standard" is in 40% range, there are quiet few students who are not doing well in class.
	What resources are required to make these changes or to maintain your progress?	N/A
MATH141 - Precalculus	Any other comments?	No comments.
	What changes have you made/do you plan to make based on the data?	No change at this moment.
	What did the assessment data indicate about the strengths of your course?	Based on the data, it seems like students understand the material in class.
	What did the assessment data indicate about the weaknesses of your course?	I don't see the weakness of my course.
	What resources are required to make these changes or to maintain your progress?	N/A
MATH181 - Calculus 1	Any other comments?	No Action Taken
	What changes have you made/do you plan to make based on the data?	No Action Taken
	What did the assessment data indicate about the strengths of your course?	No Action Taken
	What did the assessment data indicate about the weaknesses of your course?	No Action Taken

Fall 2017

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

	MATH181 - Calculus 1	What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH182 - Calculus 2	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH183 - Multivariable Calculus	Any other comments?	N/A
		What changes have you made/do you plan to make based on the data?	We need to make sure not to gloss over the "easy" material, mistakenly assuming that the students will easily understand it.
		What did the assessment data indicate about the strengths of your course?	They did well on SLO 2.
		What did the assessment data indicate about the weaknesses of your course?	Oddly, they did not do well on SLO 1, which is the easier of the two. One instructor said this was her weakest 183 class ever, but then they did ok on SLO 2 so who knows...
		What resources are required to make these changes or to maintain your progress?	N/A
	MATH184 - Linear Algebra Diff Equations	Any other comments?	N/A
		What changes have you made/do you plan to make based on the data?	N/A
		What did the assessment data indicate about the strengths of your course?	N/A
		What did the assessment data indicate about the weaknesses of your course?	N/A
		What resources are required to make these changes or to maintain your progress?	N/A
Fall 2017	MATH189 - Independent Projects	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Fall 2017	MATH189 - Independent Projects	What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH309 - Algebra and Math Literacy	Any other comments?	na
		What changes have you made/do you plan to make based on the data?	na
		What did the assessment data indicate about the strengths of your course?	na
		What did the assessment data indicate about the weaknesses of your course?	na
		What resources are required to make these changes or to maintain your progress?	na
	MATH311 - Algebra 1	Any other comments?	na
		What changes have you made/do you plan to make based on the data?	na
		What did the assessment data indicate about the strengths of your course?	na
		What did the assessment data indicate about the weaknesses of your course?	na
		What resources are required to make these changes or to maintain your progress?	na
	MATH313 - Algebra 1: Part 1	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH314 - Algebra 1: Part 2	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Fall 2017	MATH314 - Algebra 1: Part 2	What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH321 - First Year Geometry	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH331 - Algebra 2	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH333 - Algebra 2: Part 1	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH334 - Algebra 2: Part 2	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Fall 2017	MATH334 - Algebra 2: Part 2	What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH521 - Foundations of Mathematics	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH531 - Pre-Algebra	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
Fall 2018	MATH100 - Nature of Modern Mathematics	Any other comments?	None.
		What changes have you made/do you plan to make based on the data?	No changes planned.
		What did the assessment data indicate about the strengths of your course?	There was only one section offered of the course. 65% of the students exceeded the standard and 13% of the students met the standard for a total of 78% of the students either exceeding or meeting the standard. This shows that the students had strong skills using the calculator to compute factorials and using "guess and check" on the calculator to solve algebraic problems.
		What did the assessment data indicate about the weaknesses of your course?	4 of the 5 students who did not meet the standard earned an F in the course. They were weak in all outcomes. Therefore, there was only one student who showed weakness on this one particular outcome.
		What resources are required to make these changes or to maintain your progress?	None.
	MATH105 - Mathematics for Teachers	Any other comments?	Great job by the instructor!
		What changes have you made/do you plan to make based on the data?	The instructor doesn't need to change anything.
		What did the assessment data indicate about the strengths of your course?	The course is taught by Amanda shows majority of students had a high performance for this SLO.
		What did the assessment data indicate about the weaknesses of your course?	None.

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

MATH105 - Mathematics for Teachers	What resources are required to make these changes or to maintain your progress?	NA.
MATH121 - Trigonometry	Any other comments?	None
	What changes have you made/do you plan to make based on the data?	Additional applications with the use of the calculator.
	What did the assessment data indicate about the strengths of your course?	The students had a good understanding of the inverse function.
	What did the assessment data indicate about the weaknesses of your course?	Maybe more time needs to be spent on using the calculator for applications.
	What resources are required to make these changes or to maintain your progress?	Additional graphing calculators could be made available to students through the Math Center rental program.
MATH123 - Elementary Statistics	Any other comments?	One teacher commented that they would like to get a class set of calculators to make sure that each student has the same level of calculator to use during class time.
	What changes have you made/do you plan to make based on the data?	In order to improve their course, teachers mentioned that they will need to remind students the differences between the sample and population symbols on the calculator. One teacher mentioned that they will require the use of a graphing calculator in future classes so that all students are working with the same type of technology.
	What did the assessment data indicate about the strengths of your course?	The assessment data showed that (of the teacher who entered data), 92.62% of their students met or exceeded the standard. Since our goal is 70%, we were well above the goal. Almost every teacher who responded, stated that students demonstrated an understanding of using the calculator. Several teachers commented that the standard was efficiently taught, that students understood how to find the sample mean, were good with entering data, and were profi..
	What did the assessment data indicate about the weaknesses of your course?	The comments on the weaknesses of the course were varied according to the responding teachers. Some of the teachers mentioned that their students mixed up the sample standard deviation with the population standard deviation. One teacher mentioned that their students did not round to the decimal stated in the instructions. Another instructor said that the only students that got 1's on the SLO assessment, got less than 10% on the previous exam in the class.
	What resources are required to make these changes or to maintain your progress?	There are several resources that will be required to make the changes stated above, as well as to maintain our progress. These resources include: Textbooks, Graphing Calculators such as TI 83/84, Math Center, Math Center Tutors, Technology in Classroom, Faculty, Math Center Coordinator, Math Center Coordinator Assistant, and Math Center Expansion. Each of these items is explained in more detail below...
MATH131 - College Algebra	Any other comments?	None
	What changes have you made/do you plan to make based on the data?	We will continue to reinforce the language of mathematics in our instruction.
	What did the assessment data indicate about the strengths of your course?	The students appeared to have a good understanding of the different features that the calculator provides for math applications.
	What did the assessment data indicate about the weaknesses of your course?	The students did not understand how to translate mathematical problems into the language of algebra.
	What resources are required to make these changes or to maintain your progress?	No additional resources are required.
MATH135 - Calculus with Applications	Any other comments?	I think overall students did well in class .
	What changes have you made/do you plan to make based on the data?	N/A
	What did the assessment data indicate about the strengths of your course?	76% of the class meets the standard. It seems like students learned how to graph and utilize a graphing tool.
	What did the assessment data indicate about the weaknesses of your course?	24% of class does not meet the standard.

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

	MATH135 - Calculus with Applications	What resources are required to make these changes or to maintain your progress?	To assess this SLO, assign more assignments involving graphing and go over more graphing problems in class.
	MATH141 - Precalculus	Any other comments?	Overall, it seems like students did learn in class.
		What changes have you made/do you plan to make based on the data?	I assigned more examples in class. I assigned more homework assignments.
		What did the assessment data indicate about the strengths of your course?	67% of class met the standard.
		What did the assessment data indicate about the weaknesses of your course?	33% of class did not meet the standard.
		What resources are required to make these changes or to maintain your progress?	I will keep doing what I have done in previous semester.
	MATH181 - Calculus 1	Any other comments?	N/A
		What changes have you made/do you plan to make based on the data?	It seems as though this was a good questions with solid results coming from the students assessed. The faculty who completed responses to their student results indicated that they felt their students understood the SLO and will hopefully do just as well, if not better, the next time we assess this SLO.
		What did the assessment data indicate about the strengths of your course?	The assessment data indicated that we reached our goal of 70% proficiency with the technology student learning outcome. When reviewing the four groups the students would fall into (exceeded standard, met standard, did not meet standard, or N/A), the largest group was for students who exceeded the standard which was encouraging to see. Many students appear to have a strong comfort level when using the calculator to assist in solving mathematics problems.
		What did the assessment data indicate about the weaknesses of your course?	There did seem to be some concern over the idea presented in the SLO not typically being covered in class and that there was some concern over students' understanding the vocabulary associated with the problem. It is possible that some of the students who fell below the expected understanding are having difficulty due to access to technology. Having a classroom set(s) of graphing calculators would ensure every student has a reasonable opportunity to underst..
		What resources are required to make these changes or to maintain your progress?	Having classroom set(s) of graphing calculators would likely improve the results of this SLO moving forward.
	MATH182 - Calculus 2	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
Fall 2018	MATH183 - Multivariable Calculus	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Term	Course	Question	Response
Fall 2018	MATH183 - Multivariable Calculus	What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH184 - Linear Algebra Diff Equations	Any other comments?	N/A
		What changes have you made/do you plan to make based on the data?	N/A
		What did the assessment data indicate about the strengths of your course?	N/A
		What did the assessment data indicate about the weaknesses of your course?	N/A
		What resources are required to make these changes or to maintain your progress?	N/A
	MATH309 - Algebra and Math Literacy	Any other comments?	none
		What changes have you made/do you plan to make based on the data?	Not sure. Study habits are a problem. maybe incorporate Habits of Mind in class
		What did the assessment data indicate about the strengths of your course?	Student did learn how to use spreadsheets. They can enter formulas and draw graphs. Faculty said they focus on Excel so students can see how they might use the math in their future.
		What did the assessment data indicate about the weaknesses of your course?	Students did not turn in work. Other issues was using the calculator instead of learning how to enter formulas (so it took forever to fill in long tables).
		What resources are required to make these changes or to maintain your progress?	none
	MATH311 - Algebra 1	Any other comments?	no
		What changes have you made/do you plan to make based on the data?	One faculty commented that they will not change their methods of doing everything by hand. Another commented that they will take some time in class to discuss the use of the parenthesis.
		What did the assessment data indicate about the strengths of your course?	Students did well and were up to par. Some faculty felt that the use of a calculator in Algebra 1 was no okay and that it should all be done by hand.
		What did the assessment data indicate about the weaknesses of your course?	Students struggled with English and so could not understand the instructions.
		What resources are required to make these changes or to maintain your progress?	In order to make these changes, the resources needed are: textbooks, Math Center, technology in the classroom, and Math Center Coordinator and Assistant. Resource Requests 1. Textbooks (Other Resources) Students need to continue to have access to textbooks in the Math Center. 2. Math Center (Facility Needs) Students need to continue be able to utilize the Math Center for tutorial services, a place to study, and for the use of their computers. 3. Technology in Class..
	MATH321 - First Year Geometry	Any other comments?	None.
		What changes have you made/do you plan to make based on the data?	The textbook does not emphasize converting the answers to decimal form so one instructor mentioned that they had not required this to be done on the previous tests. Therefore, they stated that they will need to emphasize this the next time.
		What did the assessment data indicate about the strengths of your course?	For the 2 sections of the Math 321 - Geometry course, 67.31% of the students either met or exceeded the standard. Only one instructor provided a response and stated that the part that brought the scores down was the fact that some students either didn't convert their square root form answers into decimal form or forgot to do it for both problems. So the strength was the fact that the students generally were able to use the correct theorems and formulas to solve the pr..
		What did the assessment data indicate about the weaknesses of your course?	Students either did not follow directions to convert their answers to decimal form, did not have a calculator to do so, or did not know how to do it.

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Fall 2018	MATH321 - First Year Geometry	What resources are required to make these changes or to maintain your progress?	None.
	MATH331 - Algebra 2	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH333 - Algebra 2: Part 1	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH521 - Foundations of Mathematics	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH531 - Pre-Algebra	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Fall 201	MATH531 - Pre-Algebra	What resources are required to make these changes or to maintain your progress?	No Action Taken
Spring 2015	MATH100 - Nature of Modern Mathematics	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	N/A
		What did the assessment data indicate about the strengths of your course?	N/A
		What did the assessment data indicate about the weaknesses of your course?	N/A
	MATH105 - Mathematics for Teachers	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	I need to target the group of students who struggle in the course.
		What did the assessment data indicate about the strengths of your course?	There are a group of students who did great.
		What did the assessment data indicate about the weaknesses of your course?	Either you get it or you don't!
	MATH121 - Trigonometry	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	N/A
		What did the assessment data indicate about the strengths of your course?	N/A
		What did the assessment data indicate about the weaknesses of your course?	N/A
	MATH123 - Elementary Statistics	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	N/a
		What did the assessment data indicate about the strengths of your course?	N/a
		What did the assessment data indicate about the weaknesses of your course?	N/A
	MATH131 - College Algebra	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	N/a
		What did the assessment data indicate about the strengths of your course?	N/a
		What did the assessment data indicate about the weaknesses of your course?	N/a
	MATH135 - Calculus with Applications	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	N/a
		What did the assessment data indicate about the strengths of your course?	N/a
		What did the assessment data indicate about the weaknesses of your course?	N/a
	MATH141 - Precalculus	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	N/a

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2015	MATH141 - Precalculus	What did the assessment data indicate about the strengths of your course?	N/a
		What did the assessment data indicate about the weaknesses of your course?	N/a
	MATH181 - Calculus 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	N/a
		What did the assessment data indicate about the strengths of your course?	N/a
		What did the assessment data indicate about the weaknesses of your course?	N/a
	MATH182 - Calculus 2	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	CSLOs & questions testing CSLOs need to be reconsidered & rewritten. Faculty participation, cooperation, & uniformity in assessment process needs to somehow be encouraged. Care must be taken when interpreting any/all CSLO data.
		What did the assessment data indicate about the strengths of your course?	CSLOs & questions testing CSLOs need to be reconsidered & rewritten. Faculty participation, cooperation, & uniformity in assessment process needs to somehow be encouraged. Care must be taken when interpreting any/all CSLO data.
		What did the assessment data indicate about the weaknesses of your course?	CSLOs & questions testing CSLOs need to be reconsidered & rewritten. Faculty participation, cooperation, & uniformity in assessment process needs to somehow be encouraged. Care must be taken when interpreting any/all CSLO data.
	MATH183 - Multivariable Calculus	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	CSLOs & questions testing CSLOs need to be reconsidered & rewritten. Faculty participation, cooperation, & uniformity in assessment process needs to somehow be encouraged. Care must be taken when interpreting any/all CSLO data.
		What did the assessment data indicate about the strengths of your course?	CSLOs & questions testing CSLOs need to be reconsidered & rewritten. Faculty participation, cooperation, & uniformity in assessment process needs to somehow be encouraged. Care must be taken when interpreting any/all CSLO data.
		What did the assessment data indicate about the weaknesses of your course?	CSLOs & questions testing CSLOs need to be reconsidered & rewritten. Faculty participation, cooperation, & uniformity in assessment process needs to somehow be encouraged. Care must be taken when interpreting any/all CSLO data.
	MATH184 - Linear Algebra Diff Equations	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	Did not assess.
		What did the assessment data indicate about the strengths of your course?	Did not assess.
		What did the assessment data indicate about the weaknesses of your course?	Dis not assess.
	MATH189 - Independent Projects	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH311 - Algebra 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	Issue with giving a single score for several questions. This points to a need to have more sessions on rubrics and rubric grading, faculty still rely on a "points" system rather than understanding the idea of looking to see if students understood a bigger idea. ..
		What did the assessment data indicate about the strengths of your course?	Students made minor errors, which can be big at this level. Many are able to substitute and distribute. Another faculty commented that students are able to solve equation without fractions or inequalities.
		What did the assessment data indicate about the weaknesses of your course?	More time needs to be spent reviewing previous material and the SLOs themselves. Several students still struggle with the order of operations and integer arithmetic. More time for these topics and solving linear equations was encouraged. Fractions continue to haunt students.

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2015	MATH313 - Algebra 1: Part 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH314 - Algebra 1: Part 2	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH321 - First Year Geometry	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	N/a
		What did the assessment data indicate about the strengths of your course?	N/a
		What did the assessment data indicate about the weaknesses of your course?	N/a
	MATH331 - Algebra 2	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	N/a
		What did the assessment data indicate about the strengths of your course?	N/a
		What did the assessment data indicate about the weaknesses of your course?	N/a
	MATH333 - Algebra 2: Part 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH334 - Algebra 2: Part 2	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH521 - Foundations of Mathematics	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	N/a
		What did the assessment data indicate about the strengths of your course?	N/a

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2015	MATH521 - Foundations of Mathematics	What did the assessment data indicate about the weaknesses of your course?	N/a
	MATH531 - Pre-Algebra	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	N/a
		What did the assessment data indicate about the strengths of your course?	N/a
		What did the assessment data indicate about the weaknesses of your course?	N/a
Spring 2016	MATH100 - Nature of Modern Mathematics	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	The statistics part of the course is always more challenging for the students. I will continue to alert students to the areas that often cause confusion and will look at more statistical studies to help students understand.
		What did the assessment data indicate about the strengths of your course?	73.7% and 79% of the students either exceeded or met the standard on 2 separate assessments of SLO #4. Most of the students exceeded the standard. One assessment involved social choice where the students found the Banzhaf power distribution of a weighted voting system. The second assessment involved management science where the students applied Euler's theorems and found Euler paths and circuits.
		What did the assessment data indicate about the weaknesses of your course?	Only 66.7% of the students exceeded or met the standard for the assessment of SLO #3 where they interpreted a statistical study. Many students had difficulty identifying the population of a survey and some students had difficulty determining if the survey suffered from selection bias.
	MATH105 - Mathematics for Teachers	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	The course will not be a hybrid course any more. These students need to be in class to participate in discussions and group projects. Starting Fall 2016 we will meet twice per week.
		What did the assessment data indicate about the strengths of your course?	Emphasize on problem solving is a great feature of this course. My observation is that students' critical thinking was noticeably improved.
		What did the assessment data indicate about the weaknesses of your course?	Not enough in-class time!
	MATH121 - Trigonometry	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No changes need to be made for the course.
		What did the assessment data indicate about the strengths of your course?	The students seemed to have a good understanding of complex numbers in trigonometric form.
		What did the assessment data indicate about the weaknesses of your course?	No weaknesses are evident.
	MATH123 - Elementary Statistics	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	In order to improve their course, teachers mentioned that they will need to work more with students and do more calculator examples in class. One teacher commented that they will create a "key" for what each symbol stands for on the calculator so that students can study it. Some teachers mentioned that they need to emphasize the difference between a population and a sample and do a cumulative review of calculator commands. Teachers also felt that there ..
		What did the assessment data indicate about the strengths of your course?	The assessment data showed that (of the teacher who entered data), 75.24% of their students met or exceeded the standard. Since our goal is 70%, we were above and beyond the goal. One of the strengths stated for several people was that even if the students didn't remember the specific calculator commands, they were still able to complete problems on the calculator using the formula. This is always the goal in teaching students, to show students multiple w..
		What did the assessment data indicate about the weaknesses of your course?	The comments on the weaknesses of the course were varied according to the responding teachers. Some of the teachers mentioned that the students knew the correct calculator command, but didn't know the correct answer to copy down from the calculator screen. For example, one particular calculator command displays multiple items including the sample standard deviation and the population standard deviation. Students copied down the incorrect standard deviati..
	MATH131 - College Algebra	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No changes are required.
		What did the assessment data indicate about the strengths of your course?	The students seemed to understand modeling with variation as applied to a real life problem.
		What did the assessment data indicate about the weaknesses of your course?	The students performed at the appropriate level of course expectations.
	MATH135 - Calculus with Applications	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	I plan to make no changes based on the data.

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2016	MATH135 - Calculus with Applications	What did the assessment data indicate about the strengths of your course?	Overall scores indicate that students understand the course material.
		What did the assessment data indicate about the weaknesses of your course?	N/A
	MATH141 - Precalculus	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	I plan to make no changes in this course.
		What did the assessment data indicate about the strengths of your course?	The assessment data indicates that overall courses are doing fine.
		What did the assessment data indicate about the weaknesses of your course?	N/A
	MATH181 - Calculus 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	We could design additional activities reinforcing the appropriate translation of real life situations into calculus language.
		What did the assessment data indicate about the strengths of your course?	The students seemed to understand differentiation techniques.
		What did the assessment data indicate about the weaknesses of your course?	The students had difficulties translating real life situations into mathematical language.
	MATH182 - Calculus 2	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	N/A
		What did the assessment data indicate about the strengths of your course?	N/A
		What did the assessment data indicate about the weaknesses of your course?	N/A
	MATH183 - Multivariable Calculus	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	Faculty should spend more time reviewing the substitution method before covering double integration.
		What did the assessment data indicate about the strengths of your course?	The students seem to understand this SLO. Around 80% met or exceeded the standard.
		What did the assessment data indicate about the weaknesses of your course?	The students who had difficulty setting up the integrals generally reversed the upper and lower limits of integration. The main weakness I saw for this assessment was that even if the student was able to correctly set up the integral, they had difficulty evaluating the integral. Their problems seemed to be coming from the fact that they haven't mastered the substitution method of solving integrals from Calculus 2 as opposed to understanding the process of performing double..
	MATH184 - Linear Algebra Diff Equations	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No change needed.
		What did the assessment data indicate about the strengths of your course?	The students seem to understand this SLO.
		What did the assessment data indicate about the weaknesses of your course?	No apparent weakness.
	MATH189 - Independent Projects	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2016	MATH309 - Algebra and Math Literacy	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	no assessment done this semester because it was our first time teaching it and we just barely survived the prep.
		What did the assessment data indicate about the strengths of your course?	no assessment done this semester because it was our first time teaching it and we just barely survived the prep.
		What did the assessment data indicate about the weaknesses of your course?	no assessment done this semester because it was our first time teaching it and we just barely survived the prep.
	MATH311 - Algebra 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	Spend more time on Linear Modeling and include problems through out the semester in warms-ups or other activities.
		What did the assessment data indicate about the strengths of your course?	Overall a small number of students did learn how to model linear equations. One reason for the small number may be due to lack of student engagement, attendance, homework completion.
		What did the assessment data indicate about the weaknesses of your course?	Not enough time is spent on Linear Modeling. Many students show a lack of commitment to learning.
	MATH313 - Algebra 1: Part 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH314 - Algebra 1: Part 2	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH321 - First Year Geometry	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	More effort is needed to help the students understand why each step of the construction used to solve the second problem is used.
		What did the assessment data indicate about the strengths of your course?	Over 70% of the students in each of the 2 sections of geometry assessed either exceeded or met the standard. Most of the students showed a strong understanding of the first construction problem.
		What did the assessment data indicate about the weaknesses of your course?	Some students made some small errors on the second construction problem showing some lack of understanding of the construction needed to solve this problem.
	MATH331 - Algebra 2	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	I suggest to test every two or three weeks to make the students to study more often. I suggest to assign prior the each meeting a set of problems to be intended to solve, then have the students discuss these problems in groups next class, and the instructor can build up the lecture on that discussion.
		What did the assessment data indicate about the strengths of your course?	The course can help students to understand the set-up of systems of equations to solve problems very well, but only to the students that expect to use this skill in future courses.
		What did the assessment data indicate about the weaknesses of your course?	The course is not helping the majority of students because is not interesting to them. The course is not engaging the students into doing homework and participating in class.
	MATH333 - Algebra 2: Part 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2016	MATH333 - Algebra 2: Part 1	What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH334 - Algebra 2: Part 2	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH521 - Foundations of Mathematics	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH531 - Pre-Algebra	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
Spring 2017	MATH100 - Nature of Modern Mathematics	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH105 - Mathematics for Teachers	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Term	Course	Question	Response
Spring 2017	MATH121 - Trigonometry	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH123 - Elementary Statistics	Any other comments?	There were comments from several teachers that students are less focused on their course and are not putting in as much effort into their work as students in the past. Students are rushing through their homework to just get the answers, then are not performing well on tests. As a result, the students are begging the teacher for extra credit so that their grade can be boosted. Other teachers commented that students don't seem to be willing to struggle with a topic. They..
		What changes have you made/do you plan to make based on the data?	In order to improve their course, teachers mentioned that they will need to work more with students and do more examples of contingency tables in class. Another teacher commented that they want to include more spiral review throughout the semester in future semesters. Others plan to assign more homework problems involving contingency tables, place more stress on SLO topics, create extra worksheets, and spend extra time covering contingency tables. ..
		What did the assessment data indicate about the strengths of your course?	The assessment data showed that (of the teacher who entered data), 68.97% of their students met or exceeded the standard. Since our goal is 70%, we were slightly below the goal. Almost every teacher who responded, stated that students demonstrated an understanding of probability. Some teachers also commented that students were able to complete a simple "and" probability problem.
		What did the assessment data indicate about the weaknesses of your course?	The comments on the weaknesses of the course were varied according to the responding teachers. Some of the teachers mentioned that their students were not motivated in the course and were just interested in getting the correct homework answers and not in learning the material. Other teachers stated that they did not prepare their students well enough when it came to contingency tables. Some teachers commented that the table format of the question may hav..
		What resources are required to make these changes or to maintain your progress?	There are many resources required to make these changes and to maintain our progress. These, described in detail are shown below. Name: Textbooks Detail: Students need to continue to have access to textbooks in the Math Center. The statistics textbook costs $237.5..
	MATH131 - College Algebra	Any other comments?	None.
		What changes have you made/do you plan to make based on the data?	No changes are needed.
		What did the assessment data indicate about the strengths of your course?	Good balance of understanding. The students did well.
		What did the assessment data indicate about the weaknesses of your course?	No apparent weaknesses.
		What resources are required to make these changes or to maintain your progress?	No additional resources are required.
	MATH135 - Calculus with Applications	Any other comments?	No comments.
		What changes have you made/do you plan to make based on the data?	N/A
		What did the assessment data indicate about the strengths of your course?	There is no data to evaluate at this moment.
		What did the assessment data indicate about the weaknesses of your course?	There is no data to evaluate at this moment.
		What resources are required to make these changes or to maintain your progress?	N/A

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2017	MATH141 - Precalculus	Any other comments?	N/A
		What changes have you made/do you plan to make based on the data?	I would not make no changes.
		What did the assessment data indicate about the strengths of your course?	The data shows that about 79.84% meets the institutional standards. I can say that most students comprehended this problem.
		What did the assessment data indicate about the weaknesses of your course?	The data shows that about 20.16% are below the institutional standards. The number looks reasonable to me.
		What resources are required to make these changes or to maintain your progress?	N/A
	MATH181 - Calculus 1	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH182 - Calculus 2	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH183 - Multivariable Calculus	Any other comments?	n/a
		What changes have you made/do you plan to make based on the data?	We may need to rewrite the question we are using for thisdSLO, or omit it since the problem used was at too low a level.
		What did the assessment data indicate about the strengths of your course?	The students understand this SLO.
		What did the assessment data indicate about the weaknesses of your course?	No weaknesses.
		What resources are required to make these changes or to maintain your progress?	N/A

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2017	MATH184 - Linear Algebra Diff Equations	Any other comments?	none
		What changes have you made/do you plan to make based on the data?	assessment data based on a single SLO question. Care must be taken when interpreting the data.
		What did the assessment data indicate about the strengths of your course?	assessment data based on a single SLO question. Care must be taken when interpreting the data.
		What did the assessment data indicate about the weaknesses of your course?	assessment data based on a single SLO question. Care must be taken when interpreting the data.
		What resources are required to make these changes or to maintain your progress?	N/A
	MATH189 - Independent Projects	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH309 - Algebra and Math Literacy	Any other comments?	none
		What changes have you made/do you plan to make based on the data?	3. This SLO needs work!!
		What did the assessment data indicate about the strengths of your course?	1. Students can do work with both types of models.
		What did the assessment data indicate about the weaknesses of your course?	2. More practice with numeracy is needed.
		What resources are required to make these changes or to maintain your progress?	4. Lunch so we can spend time on rewriting the SLOs
	MATH311 - Algebra 1	Any other comments?	CSLO #1: Training faculty on how to score using a rubric is needed, maybe we need some resources CSLO #2: Again training for faculty on rubric grading.
		What changes have you made/do you plan to make based on the data?	CSLO #1: Most people said not changes although one pointed out the importance of the “learn it, do it, teach it” model. CSLO #2: More time on solving all types of equations.
		What did the assessment data indicate about the strengths of your course?	CSLO #1: Overall students did well on this item. CSLO #2: Students did well, especially for simple, straight-forward equations
		What did the assessment data indicate about the weaknesses of your course?	CSLO #1: The importance of student’s applying themselves and doing the homework was mentioned. CSLO #2 : Students need more time graphing and working fractions
		What resources are required to make these changes or to maintain your progress?	CSLO #1: No additional resources are required CSLO #2: None.

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2017	MATH313 - Algebra 1: Part 1	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH314 - Algebra 1: Part 2	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH321 - First Year Geometry	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH331 - Algebra 2	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2017	MATH333 - Algebra 2: Part 1	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH334 - Algebra 2: Part 2	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH521 - Foundations of Mathematics	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH531 - Pre-Algebra	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2018	MATH100 - Nature of Modern Mathematics	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data to improve student learning and service?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the challenges of your program?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the strengths of your program?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH105 - Mathematics for Teachers	Any other comments?	No Action Taken No!
		What changes have you made/do you plan to make based on the data to improve student learning and service?	Students are doing well in this course.
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the challenges of your program?	Nothing related to this course.
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the strengths of your program?	Excellent result based on the scores.
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken None.
	MATH121 - Trigonometry	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data to improve student learning and service?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the challenges of your program?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2018	MATH121 - Trigonometry	What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the strengths of your program?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH123 - Elementary Statistics	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data to improve student learning and service?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the challenges of your program?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the strengths of your program?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH131 - College Algebra	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data to improve student learning and service?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the challenges of your program?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the strengths of your program?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2018	MATH135 - Calculus with Applications	Any other comments?	I have no comments at this point. I have no comments.
		What changes have you made/do you plan to make based on the data to improve student learning and service?	None.
		What changes have you made/do you plan to make based on the data?	We will plan to create new SLO questions.
		What did the assessment data indicate about the challenges of your program?	None.
		What did the assessment data indicate about the strengths of your course?	From the assessment data, it shows that students learned the material in class.
		What did the assessment data indicate about the strengths of your program?	The assessment data indicates that most students did okay on this SLO questions.
		What did the assessment data indicate about the weaknesses of your course?	I don't see the assessment data indicate about the weaknesses of the course.
		What resources are required to make these changes or to maintain your progress?	N/A.
	MATH141 - Precalculus	Any other comments?	No comments. No.
		What changes have you made/do you plan to make based on the data to improve student learning and service?	N/A
		What changes have you made/do you plan to make based on the data?	None
		What did the assessment data indicate about the challenges of your program?	None.
		What did the assessment data indicate about the strengths of your course?	Overall most students comprehended the SLO questions.
		What did the assessment data indicate about the strengths of your program?	The data results show that it seems like most students understood the material.
		What did the assessment data indicate about the weaknesses of your course?	None
		What resources are required to make these changes or to maintain your progress?	N/A No.
	MATH181 - Calculus 1	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data to improve student learning and service?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the challenges of your program?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

	MATH181 - Calculus 1	What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the strengths of your program?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH182 - Calculus 2	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data to improve student learning and service?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the challenges of your program?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the strengths of your program?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH183 - Multivariable Calculus	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data to improve student learning and service?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the challenges of your program?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the strengths of your program?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
Spring 2018		What resources are required to make these changes or to maintain your progress?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2018	MATH184 - Linear Algebra Diff Equations	Any other comments?	N/A
		What changes have you made/do you plan to make based on the data to improve student learning and service?	N/A
		What changes have you made/do you plan to make based on the data?	N/A
		What did the assessment data indicate about the challenges of your program?	N/A
		What did the assessment data indicate about the strengths of your course?	N/A
		What did the assessment data indicate about the strengths of your program?	N/A
		What did the assessment data indicate about the weaknesses of your course?	N/A
		What resources are required to make these changes or to maintain your progress?	N/A
	MATH189 - Independent Projects	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data to improve student learning and service?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the challenges of your program?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the strengths of your program?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH309 - Algebra and Math Literacy	Any other comments?	na No assessment this semester due to updated SLOs
		What changes have you made/do you plan to make based on the data to improve student learning and service?	na
		What changes have you made/do you plan to make based on the data?	No assessment this semester due to updated SLOs
		What did the assessment data indicate about the challenges of your program?	na

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2018	MATH309 - Algebra and Math Literacy	What did the assessment data indicate about the strengths of your course?	No assessment this semester due to updated SLOs
		What did the assessment data indicate about the strengths of your program?	na
		What did the assessment data indicate about the weaknesses of your course?	No assessment this semester due to updated SLOs
		What resources are required to make these changes or to maintain your progress?	na No assessment this semester due to updated SLOs
	MATH311 - Algebra 1	Any other comments?	NA No assessment this semester due to updated SLOs
		What changes have you made/do you plan to make based on the data to improve student learning and service?	NA
		What changes have you made/do you plan to make based on the data?	No assessment this semester due to updated SLOs
		What did the assessment data indicate about the challenges of your program?	NA
		What did the assessment data indicate about the strengths of your course?	No assessment this semester due to updated SLOs
		What did the assessment data indicate about the strengths of your program?	NA
		What did the assessment data indicate about the weaknesses of your course?	No assessment this semester due to updated SLOs
		What resources are required to make these changes or to maintain your progress?	NA No assessment this semester due to updated SLOs
	MATH313 - Algebra 1: Part 1	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data to improve student learning and service?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the challenges of your program?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the strengths of your program?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2018	MATH314 - Algebra 1: Part 2	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data to improve student learning and service?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the challenges of your program?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the strengths of your program?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH321 - First Year Geometry	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data to improve student learning and service?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the challenges of your program?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the strengths of your program?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH331 - Algebra 2	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data to improve student learning and service?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the challenges of your program?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2018	MATH331 - Algebra 2	What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the strengths of your program?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH333 - Algebra 2: Part 1	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data to improve student learning and service?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the challenges of your program?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the strengths of your program?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH334 - Algebra 2: Part 2	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data to improve student learning and service?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the challenges of your program?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the strengths of your program?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2018	MATH521 - Foundations of Mathematics	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data to improve student learning and service?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the challenges of your program?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the strengths of your program?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
	MATH531 - Pre-Algebra	Any other comments?	No Action Taken
		What changes have you made/do you plan to make based on the data to improve student learning and service?	No Action Taken
		What changes have you made/do you plan to make based on the data?	No Action Taken
		What did the assessment data indicate about the challenges of your program?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the strengths of your program?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
		What resources are required to make these changes or to maintain your progress?	No Action Taken
Spring 2019	MATH100 - Nature of Modern Mathematics	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	I don't know what else I can do beyond what was described in the previous question to help my students be more successful on this SLO. One thing I am considering is to no longer accept all the students on my waitlist. My class started with 41 students when our class size limit is 36. I found I was unable to assist all the students when they were working in groups.
		What did the assessment data indicate about the strengths of your course?	There was only one section of Math 100 offered. This will serve as the section and course action plan. Only 66.7% of the students demonstrated complete or basic understanding of SLO #1. Interestingly, 51.5% showed COMPLETE understanding while 15.2% showed BASIC understanding. This seems to show that the vast majority of t..
		What did the assessment data indicate about the weaknesses of your course?	This class did not attain the goal of 70% of the students either demonstrating complete or basic understanding of SLO #1. Only 66.7% did. This doesn't surprise me because the assessment questions on Test #3 involved permutations and combinations. These types of problems are often difficult for students because they need to carefully analyze the word problem in order to choose the appropriate strategies to use to solve the problem. We looked at many examples ..
	MATH105 - Mathematics for Teachers	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2019	MATH105 - Mathematics for Teachers	What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH121 - Trigonometry	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH123 - Elementary Statistics	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH131 - College Algebra	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH135 - Calculus with Applications	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH141 - Precalculus	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH179A - Support for Math 123	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2019	MATH181 - Calculus 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH182 - Calculus 2	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH183 - Multivariable Calculus	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH184 - Linear Algebra Diff Equations	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	continue to collect meaningful data in order to make our program better
		What did the assessment data indicate about the strengths of your course?	continue to collect meaningful data in order to make our program better
		What did the assessment data indicate about the weaknesses of your course?	continue to collect meaningful data in order to make our program better
	MATH189 - Independent Projects	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH309 - Algebra and Math Literacy	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH311 - Algebra 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2019	MATH311 - Algebra 1	What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH313 - Algebra 1: Part 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH314 - Algebra 1: Part 2	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH321 - First Year Geometry	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	NOTE: THE INSTRUCTORS WERE UNABLE TO SUBMIT AN ACTION PLAN. I do not plan any changes to my course.
		What did the assessment data indicate about the strengths of your course?	NOTE: THE INSTRUCTORS WERE UNABLE TO SUBMIT AN ACTION PLAN. Looking at the data for the two sections of geometry, in total 72.2% of the students who did the assessment demonstrated complete or basic understanding of SLO #1. This exceeds the math department goal of 70%. The instr..
		What did the assessment data indicate about the weaknesses of your course?	NOTE: THE INSTRUCTORS WERE UNABLE TO SUBMIT AN ACTION PLAN. For my class, 78.6% of the students demonstrated complete understanding of SLO #1. No weaknesses identified.
	MATH331 - Algebra 2	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH333 - Algebra 2: Part 1	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH334 - Algebra 2: Part 2	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH521 - Foundations of	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken

12. Course Improvement Plans: MATH- These are all the course improvement plans that have been reported for the last 6 years. The terms and courses that do not have improvement plans reported have been filtered out.

Spring 2019	MATH521 - Foundations of Mathematics	What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken
	MATH531 - Pre-Algebra	What changes have you made/do you plan to make based on the data? What resources would you need, if any, to make these changes?	No Action Taken
		What did the assessment data indicate about the strengths of your course?	No Action Taken
		What did the assessment data indicate about the weaknesses of your course?	No Action Taken

13. Program Learning Outcomes: Mathematics- List of PLOs for the selected program.

PLO
MATH PSLO - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
MATH PSLO - Estimate and check mathematical results for reasonableness.
MATH PSLO - Interpret and draw inferences from mathematical models such as formulas, graphs, tables and schematics.
MATH PSLO - Represent mathematical information symbolically, visually, numerically, verbally and in writing.
MATH PSLO - Use appropriate technologies to analyze and solve mathematical problems, verify the appropriateness and reasonableness of the solutions(s).
MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus.

The view is broken down by PLO. The data is filtered on Term1 and Program. The Term1 filter keeps 12 of 29 members. The Program filter keeps Mathematics. The view is filtered on PLO, which keeps 240 of 668 members.

14. Course Learning Outcomes: Mathematics- List of CLOs for the selected program.

Course	Clo#	
MATH100	MATH1	Evaluate and apply methods of gathering, organizing, summarizing, and analyzing data. Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
	MATH2	Relate and apply elementary probability theory to calculate probabilities of events or solve appropriate level application problems. Represent mathematical information symbolically, graphically, numerically, and in writing.
	MATH3	Demonstrate an ability to read and comprehend statistical studies or cite specific examples of how mathematics interacts with society. Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
	MATH4	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models. Demonstrate the ability to solve problems in the areas of social choice; management science; and geometric and algebraic patterns.
	MATH5	Check mathematical results for reasonableness.
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.
MATH105	MATH1	Perform the four basic operations with real numbers and explain the underlying mathematical concepts of arithmetic algorithms. Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
	MATH2	Determine an appropriate strategy to solve a problem, model a problem mathematically and solve it, and use mathematical reasoning and common sense to interpret the solution. ...
	MATH3	Demonstrate an understanding of different numeration systems including early historical counting systems. Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
	MATH4	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
	MATH5	Check mathematical results for reasonableness.
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.
MATH121	MATH1	Be able to define, identify the characteristics of, and solve problems related to angles. Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
	MATH2	Be able to define the six trigonometric ratios and apply them to solve applied problems. Represent mathematical information symbolically, graphically, numerically, and in writing.
	MATH3	Be able to construct and analyze graphs of trigonometric functions. Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
	MATH4	Be able to solve a variety of trigonometric equations and real world problems using oblique triangles Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
	MATH5	Be able to define and use complex numbers in trigonometric form. Check mathematical results for reasonableness.
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.
MATH123	MATH1	Evaluate and apply methods of gathering, organizing, summarizing, and analyzing data. Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
	MATH2	Relate and apply probability theory to solve appropriate application problems. Represent mathematical information symbolically, graphically, numerically, and in writing.
	MATH3	Demonstrate their understanding of statistical inference. Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
	MATH4	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models. Demonstrate the ability to use statistical software/technology.
	MATH5	Check mathematical results for reasonableness.
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.
MATH131	MATH1	Demonstrate a practical and conceptual understanding of a function. Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
	MATH2	Demonstrate the ability to analyze functions using a variety of methods. Represent mathematical information symbolically, graphically, numerically, and in writing.
	MATH3	Demonstrate knowledge of algebraic, logarithmic and exponential functions, one-to-one and inverse functions, elementary sequences and series, and conic sections in order to apply these skills to further topics and problems in this course. ...
	MATH4	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models. Demonstrate the ability to communicate effectively about mathematics.
	MATH5	Check mathematical results for reasonableness. ...
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.

CLO broken down by Course and Clo#. The data is filtered on Term1 and Program. The Term1 filter keeps 12 of 29 members. The Program filter keeps Mathematics.

14. Course Learning Outcomes: Mathematics- List of CLOs for the selected program.

Course	Clo#	
MATH135	MATH1	Demonstrate the ability to analyze functions algebraically, numerically, and graphically; discuss the concept of continuity and evaluate limits. Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
	MATH2	Demonstrate an understanding of the mathematical concept of the derivative. Represent mathematical information symbolically, graphically, numerically, and in writing.
	MATH3	Demonstrate an understanding of the mathematical concept of integration. Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
	MATH4	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models. Demonstrate the ability to apply derivative and integration to formulate mathematical models and solve real world problems.
	MATH5	Check mathematical results for reasonableness. ...
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.
MATH141	MATH1	Develop problem-solving and mathematical modeling skills necessary for calculus. Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
	MATH2	Demonstrate a practical and conceptual understanding of a function including inverse functions. Represent mathematical information symbolically, graphically, numerically, and in writing.
	MATH3	Demonstrate knowledge of linear and exponential functions. Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
	MATH4	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models. Demonstrate proficiency in the use of trigonometric function by way of graphing, solving and manipulating.
	MATH5	Check mathematical results for reasonableness. Demonstrate the ability to communicate effectively about mathematics.
	MATH6	Use appropriate technologies to analyze and solve mathematical problems. ...
MATH181	MATH1	Find limits in order to develop differentiation and integration. Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
	MATH2	Demonstrate an understanding of continuity in order to apply the concept to other topics in calculus. Represent mathematical information symbolically, graphically, numerically, and in writing.
	MATH3	Differentiate algebraic and trigonometric functions in order to solve applied problems. Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
	MATH4	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models. Solve applied problems involving differentiation.
	MATH5	Check mathematical results for reasonableness. ...
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.
MATH182	MATH1	Find integrals and solve differential equations using analytical, numerical, and graphical techniques. Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
	MATH2	Analyze sequences and series to determine convergence or divergence and derive Taylor series to approximate functions. Represent mathematical information symbolically, graphically, numerically, and in writing.
	MATH3	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables. Model and solve applied problems using integration and differential equations.
	MATH4	...
	MATH5	Check mathematical results for reasonableness.
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.
MATH183	MATH1	Demonstrate a practical and conceptual understanding of vectors in 3-space. Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
	MATH2	Demonstrate a practical and conceptual understanding of differentiation in several variables in several contexts- graphically, numerically, analytically and verbally. ...
	MATH3	Demonstrate a practical and conceptual understanding of integrations in several contexts- graphically, numerically, analytically and verbally. Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
	MATH4	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models. Develop problem solving and math modeling skills.
	MATH5	Check mathematical results for reasonableness. ...
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.

CLO broken down by Course and Clo#. The data is filtered on Term1 and Program. The Term1 filter keeps 12 of 29 members. The Program filter keeps Mathematics.

14. Course Learning Outcomes: Mathematics- List of CLOs for the selected program.

Course	Clo#	
MATH184	MATH1	Demonstrate a practical and conceptual understanding of systems of linear equations. Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
	MATH2	Demonstrate a practical and conceptual understanding of vector spaces. Represent mathematical information symbolically, graphically, numerically, and in writing.
	MATH3	Demonstrate a practical and conceptual understanding of linear transformations. Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
	MATH4	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models. Solve a variety of first order differential equations.
	MATH5	Check mathematical results for reasonableness. Solve a variety of second order differential equations.
	MATH6	Solve systems of differential equations. Use appropriate technologies to analyze and solve mathematical problems.
	MATH7	Develop problem solving and math modeling skills.
MATH309	MATH1	Create and/or evaluate mathematical models that translate from real life situation/application. Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
	MATH2	Analyze/synthesize a variety of problems and determine appropriate strategies to produce accurate results. Represent mathematical information symbolically, graphically, numerically, and in writing.
	MATH3	Demonstrate the ability to communicate effectively about mathematics. Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
	MATH4	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models. Understand and use multiple representations of problems.
	MATH5	Check mathematical results for reasonableness. Demonstrate an understanding and the ability to use functions, graphs, statistics, geometry and numeracy skills.
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.
MATH311	MATH1	Apply the rules of signed numbers, the order of operations agreement, and the rules for evaluating and simplifying algebraic expressions. Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
	MATH2	Represent mathematical information symbolically, graphically, numerically, and in writing. Solve first degree equations and inequalities in one variable in order to solve problems that can be modeled by these relationships.
	MATH3	Interpret and draw inferences from mathematical models such as formulas, graphs, and tables. Plot points and graph linear equations on a rectangular coordinate system to solve problems.
	MATH4	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models. Determine the equation of a given line in order to solve application problems.
	MATH5	Check mathematical results for reasonableness. Demonstrate the ability to recognize, evaluate and simplify polynomial expression and to use factoring to solve quadratic equations.
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.
MATH313	MATH1	...
	MATH2	Identify symptoms of and strategies for overcoming math anxiety. Represent mathematical information symbolically, graphically, numerically, and in writing.
	MATH3	...
	MATH4	...
	MATH5	Check mathematical results for reasonableness.
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.
MATH314	MATH1	Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems. Utilize time management skills, math study skills, problem-solving strategies, and test-taking strategies to successfully learn algebra.
	MATH2	...
	MATH3	Demonstrate the ability to recognize, evaluate and simplify polynomial expressions and to use factoring to solve quadratic equations. Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
	MATH4	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models. Solve word problems at eh elementary algebra level.
	MATH5	Check mathematical results for reasonableness.

CLO broken down by Course and Clo#. The data is filtered on Term1 and Program. The Term1 filter keeps 12 of 29 members. The Program filter keeps Mathematics.

14. Course Learning Outcomes: Mathematics- List of CLOs for the selected program.

Course	Clo#	
MATH314	MATH6	Use appropriate technologies to analyze and solve mathematical problems.
MATH321	MATH1	Demonstrate a practical and conceptual understanding of geometric terms, postulates and theorems. Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
	MATH2	...
	MATH3	Develop problem solving and math modeling skills that utilize knowledge of geometric formulas or concepts to solve real world problems. Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
	MATH4	...
	MATH5	Check mathematical results for reasonableness.
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.
MATH331	MATH1	Demonstrate the ability to recognize, evaluate, and simplify algebraic expressions. Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
	MATH2	Differentiate between types of equations & types of systems and apply appropriate methods to solve them. Represent mathematical information symbolically, graphically, numerically, and in writing.
	MATH3	Graph relations & functions and demonstrate an understanding of function related concepts. Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
	MATH4	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models. Interpret and apply appropriate methods to solve applications.
	MATH5	Check mathematical results for reasonableness. Solve systems of linear equations in order to solve application problems in this and related courses.
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.
MATH333	MATH1	Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems. ...
	MATH2	Demonstrate the ability to recognize, evaluate, and simplify algebraic expressions. Represent mathematical information symbolically, graphically, numerically, and in writing.
	MATH3	Demonstrate the ability to recognize different forms of linear equations and use appropriate methods to solve them. Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
	MATH4	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models. Differentiate between types of linear equations, linear inequalities and types of systems, and apply appropriate methods to solve them.
	MATH5	Check mathematical results for reasonableness.
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.
MATH334	MATH1	Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems. ...
	MATH2	Demonstrate an understanding of function related concepts. Represent mathematical information symbolically, graphically, numerically, and in writing.
	MATH3	Demonstrate an understanding of the concepts of non-linear quadratic function and solve applications using the quadratic function. Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
	MATH4	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models. Demonstrate an understanding of inverse functions and solve applications using the inverse of a function.
	MATH5	Check mathematical results for reasonableness.
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.
MATH353	MATH1	Comprehend and use mathematical concepts at levels appropriate to their credit or noncredit mathematical courses.
	MATH2	Use mathematical terminology in order to communicate areas of need effectively.
	MATH3	Successfully complete concurrently enrolled class.
	MATH4	Take advantage of the resources in the Math Center.
MATH511	MATH1	Compute with and understand the meaning of whole numbers, integers, fractions, decimals, percents, ratios, and rates.

CLO broken down by Course and Clo#. The data is filtered on Term1 and Program. The Term1 filter keeps 12 of 29 members. The Program filter keeps Mathematics.

14. Course Learning Outcomes: Mathematics- List of CLOs for the selected program.

Course	Clo#	
MATH511	MATH2	Use arithmetic to solve practical problems and to meet personal needs.
	MATH3	Estimate and judge the reasonableness of answers.
	MATH4	Understand the concept of a variable and its role in an algebraic expression and a simple equation.
MATH513	MATH1	Learn a variety of learning and study skills essential for success in the study of mathematics.
	MATH2	Compute with and understand the meaning of whole numbers and fractions.
	MATH3	Estimate and judge the reasonableness of answers.
	MATH4	Take advantage of technology and lab resources that will support student success.
MATH514	MATH1	Compute with and understand the meaning of decimals, percents, ratios, and rates.
	MATH2	Use arithmetic to solve practical problems and to meet personal needs.
	MATH3	Estimate and judge the reasonableness of answers.
	MATH4	Understand the concept of a variable and its role in an algebraic expression and a simple equation.
MATH521	MATH1	Estimate and judge the reasonableness of answers. Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
	MATH2	Perform arithmetic operations on real numbers to solve practical problems. Represent mathematical information symbolically, graphically, numerically, and in writing.
	MATH3	Apply percentages or proportional reasoning to solve problems. Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
	MATH4	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models. Perform basic algebraic operations to simplify and evaluate expressions and to solve simple linear equations.
	MATH5	Check mathematical results for reasonableness. Communicate effectively about mathematics.
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.
MATH531	MATH1	Estimate and judge the reasonableness of answers. Solve a variety of real world problems. Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
	MATH2	Perform arithmetic operations on real numbers to solve practical problems. Represent mathematical information symbolically, graphically, numerically, and in writing.
	MATH3	Apply percentages or proportional reasoning to solve problems. Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
	MATH4	Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models. Perform basic algebraic operations to simplify and evaluate expressions and to solve simple linear equations.
	MATH5	Check mathematical results for reasonableness. Communicate effectively about mathematics.
	MATH6	Use appropriate technologies to analyze and solve mathematical problems.
MATH579A	MATHA1	Estimate and judge the reasonableness of answers.
	MATHA2	Perform arithmetic operations on real numbers.
	MATHA3	Perform basic algebraic operations to simplify and evaluate expressions and to solve simple linear equations.
	MATHA4	Communicate effectively about mathematics.

CLO broken down by Course and Clo#. The data is filtered on Term1 and Program. The Term1 filter keeps 12 of 29 members. The Program filter keeps Mathematics.

STATISTICS

Context Statistics And Evidence

Mathematics

Date: 02/28/2019

Terms Spring 2018, Fall 2017, Summer 2017

Summary

Statistic	Number of Courses	Courses
Courses in the Department	28	MATH100, MATH105, MATH121, MATH123, MATH131, MATH135, MATH141, MATH179A, MATH181, MATH182, MATH183, MATH184, MATH189, MATH309, MATH311, MATH313, MATH314, MATH321, MATH331, MATH333, MATH334, MATH353, MATH511, MATH513, MATH514, MATH521, MATH531, MATH579A
Courses with CSLOs	26	MATH100, MATH105, MATH121, MATH123, MATH131, MATH135, MATH141, MATH181, MATH182, MATH183, MATH184, MATH309, MATH311, MATH313, MATH314, MATH321, MATH331, MATH333, MATH334, MATH353, MATH511, MATH513, MATH514, MATH521, MATH531, MATH579A
Courses without CSLOs	2	MATH179A, MATH189
Courses with CSLOs mapped to PSLOs	26	MATH100, MATH105, MATH121, MATH123, MATH131, MATH135, MATH141, MATH181, MATH182, MATH183, MATH184, MATH309, MATH311, MATH313, MATH314, MATH321, MATH331, MATH333, MATH334, MATH353, MATH511, MATH513, MATH514, MATH521, MATH531, MATH579A
Courses without CSLOs mapped to PSLOs	2	MATH179A, MATH189
Courses with direct assessment of PSLOs	0	
Courses with CSLOs mapped to ILOs	26	MATH100, MATH105, MATH121, MATH123, MATH131, MATH135, MATH141, MATH181, MATH182, MATH183, MATH184, MATH309, MATH311, MATH313, MATH314, MATH321, MATH331, MATH333, MATH334, MATH353, MATH511, MATH513, MATH514, MATH521, MATH531, MATH579A
Courses without CSLOs mapped to ILOs	2	MATH179A, MATH189
Courses with direct assessment of ILOs	0	
Courses with at least one planned Assessment	15	MATH105, MATH121, MATH123, MATH131, MATH135, MATH141, MATH181, MATH182, MATH183, MATH184, MATH309, MATH311, MATH331, MATH521, MATH531
Courses with planned Assessments scored	13	MATH131, MATH182, MATH183, MATH184, MATH311, MATH331, MATH105, MATH121, MATH123, MATH141, MATH181, MATH531, MATH521
Courses with some Assessments scored	2	MATH135, MATH309
Courses without any Assessment scored	0	
Courses with no planned Assessments	13	MATH100, MATH179A, MATH189, MATH313, MATH314, MATH321, MATH333, MATH334, MATH353, MATH511, MATH513, MATH514, MATH579A
Courses with at least one planned Action Plan	22	MATH100, MATH105, MATH121, MATH123, MATH131, MATH135, MATH141, MATH181, MATH182, MATH183, MATH184, MATH189, MATH309, MATH311, MATH313, MATH314, MATH321, MATH331, MATH333, MATH334, MATH521, MATH531
Courses with Action Plan Responses	7	MATH184, MATH353, MATH511, MATH513, MATH514, MATH579A, MATH179A
Courses with some Action Plan Responses	8	MATH131, MATH183, MATH311, MATH121, MATH123, MATH135, MATH141, MATH309
Courses without Action Plan Responses	19	MATH313, MATH182, MATH321, MATH331, MATH105, MATH181, MATH333, MATH353, MATH511, MATH513, MATH514, MATH531, MATH334, MATH100, MATH314, MATH579A, MATH189, MATH521, MATH179A
Courses with no planned Action Plans	6	MATH179A, MATH353, MATH511, MATH513, MATH514, MATH579A

MATH100 - Nature of Modern Mathematics

SLOs

CSLOs	» MATH100 SLO1 - Evaluate and apply methods of gathering, organizing, summarizing, and analyzing data. » MATH100 SLO2 - Relate and apply elementary probability theory to calculate probabilities of events or solve appropriate level application problems. » MATH100 SLO3 - Demonstrate an ability to read and comprehend statistical studies or cite specific examples of how mathematics interacts with society. » MATH100 SLO4 - Demonstrate the ability to solve problems in the areas of social choice; management science; and geometric and algebraic patterns.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Interpret and draw inferences from mathematical models such as formulas, graphs, tables and schematics. » MATH PSLO - Represent mathematical information symbolically, visually, numerically, verbally and in writing. » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus.
Mapped ILOs	**ILO** ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems. ILO 2 - Critical Thinking & Problem Solving » ILO 2 - Critical Thinking & Problem Solving: Explore issues through various information sources; evaluate the credibility and significance of both the information and the source to arrive at a reasoned conclusion.

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH100 - Fall 2017					

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH100 - Spring 2018					

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH100 - Spring 2018					

MATH105 - Mathematics for Teachers

SLOs

CSLOs	» MATH105 SLO1 - Perform the four basic operations with real numbers and explain the underlying mathematical concepts of arithmetic algorithms. » MATH105 SLO2 - Determine an appropriate strategy to solve a problem, model a problem mathematically and solve it, and use mathematical reasoning and common sense to interp the solution. » MATH105 SLO3 - Demonstrate an understanding of different numeration systems including early historical counting systems.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Represent mathematical information symbolically, visually, numerically, verbally and in writing. » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus. » MATH PSLO - Estimate and check mathematical results for reasonableness. » MATH PSLO - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models. » MATH PSLO - Use appropriate technologies to analyze and solve mathematical problems, verify the appropriateness and reasonableness of the solutions(s).
Mapped ILOs	**ILO** ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems. ILO 3 - Global Awareness & Cultural Competence » ILO 3 - Global Awareness & Cultural Competence: Respectfully interact with individuals of diverse perspectives, beliefs and values being mindful of the limitation of your own cultural framework. ILO 2 - Critical Thinking & Problem Solving

	» ILO 2 - Critical Thinking & Problem Solving: Explore issues through various informatic sources; evaluate the credibility and significance of both the information and the source to arrive at a reasoned conclusion.

Assessments

Fall 2017

No data found

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH105 - Fall 2017					

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH105 - Spring 2018					

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH105 - Spring 2018					

MATH121 - Trigonometry

SLOs

CSLOs	» MATH121 SLO1 - Be able to define, identify the characteristics of, and solve problems related to angles. » MATH121 SLO2 - Be able to define the six trigonometric ratios and apply them to solve applied problems. » MATH121 SLO3 - Be able to construct and analyze graphs of trigonometric functions. » MATH121 SLO4 - Be able to solve a variety of trigonometric equations and real world problems using oblique triangles » MATH121 SLO5 - Be able to define and use complex numbers in trigonometric form.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Interpret and draw inferences from mathematical models such as formulas, graphs, tables and schematics. » MATH PSLO - Represent mathematical information symbolically, visually, numerically, verbally and in writing. » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus. » MATH PSLO - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
Mapped ILOs	**ILO** ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems.

Assessments

Fall 2017

No data found

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH121 - Fall 2017					
What did the assessment data indicate about the strengths of your course?	No action type	Anonymous	The course did focus on symbolism and different representations of trigonometric ideas.	2018-02-06	
What did the assessment data indicate about the weaknesses of your course?	No action type	Anonymous	The students did not have a good grasp of concrete trigonometric relationships.	2018-02-06	
What changes have you made/do you plan to make based on the data?	No action type	Anonymous	I will continue to emphasize basic vocabulary and trigonometric notation. Additional practice is needed by the students in class and outside of class.	2018-02-06	
What resources are required to make these changes or to maintain your progress?	No action type	Anonymous	In the future, I will prepare more exercises for the students to work on in class.	2018-02-06	
Any other comments?	No action type	Anonymous	NA	2018-02-06	

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH121 - Spring 2018					

MATH123 - Elementary Statistics

SLOs

CSLOs	» MATH123 SLO1 - Evaluate and apply methods of gathering, organizing, summarizing, and analyzing data. » MATH123 SLO2 - Relate and apply probability theory to solve appropriate application problems. » MATH123 SLO3 - Demonstrate their understanding of statistical inference. » MATH123 SLO4 - Demonstrate the ability to use statistical software/technology.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Interpret and draw inferences from mathematical models such as formulas, graphs, tables and schematics. » MATH PSLO - Represent mathematical information symbolically, visually, numerically, verbally and in writing. » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus. » MATH PSLO - Use appropriate technologies to analyze and solve mathematical problems, verify the appropriateness and reasonableness of the solutions(s).
Mapped ILOs	**ILO** ILO 4 - Information & Technology Literacy » ILO 4B - Technology Literacy: Proficiency in a technology and the ability to choose the appropriate tools. ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems. ILO 2 - Critical Thinking & Problem Solving » ILO 2 - Critical Thinking & Problem Solving: Explore issues through various information sources; evaluate the credibility and significance of both the information and the source to arrive at a reasoned conclusion.

Assessments

Fall 2017

No data found

Spring 2018

No data found

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH123 - Fall 2017					
What did the assessment data indicate about the strengths of your course?	No action type	Anonymous	The assessment data showed that (of the teacher who entered data), 81.47% of their students met or exceeded the standard. Since our goal is 70%, we were well above the goal. Almost every teacher who responded, stated that students demonstrated an understanding of hypothesis testing. Several teachers commented that the standards were efficiently taught, that students understood key points, and that only minor mistakes	2018-02-05	
What did the assessment data indicate about the weaknesses of your course?	No action type	Anonymous	The comments on the weaknesses of the course were varied according to the responding teachers. Some of the teachers mentioned that their students mixed up the order of operations, mixed up their inequality symbols when comparing the standardized test statistic to the critical value, mixed up the way to verify normality on a 2 sample proportion hypothesis test with a 2 sample proportion confidence interval. One teacher mentioned that 1/3 of their class was not able to fully complete the hypothesis test question. Other teachers mentioned that students were unable to retain knowledge of hypothesis tests for the final exam and did not verify their answers	2018-02-05	

What changes have you made/do you plan to make based on the data?	No action type	Anonymous	In order to improve their course, teachers mentioned that they will need to remind students how to check their answers with the calculator, change the number of questions on the final exam to allow more time on each question, go over the steps of the hypothesis test more, explain the differences between the P-value method and Rejection Region method, and stress the importance of the inequality symbol when doing the Rejection Region method. One teacher mentioned that they created extra worksheets, had students invent their own hypothesis test problems, then critique a peer’s hypothesis test problem and solution. Additionally, some teachers stated that they would make no changes in their future classes with regards to probabilities with contingency tables.	2018-02-05	

What resources are required to make these changes or to maintain your progress?	No action type	Anonymous	There are several resources that will be required to make the changes stated above, as well as to maintain our progress. These resources include: Textbooks, Graphing Calculators such as TI 83/84, Math Center, Math Center Tutors, Technology in Classroom, Faculty, Math Center Coordinator, Math Center Coordinator Assistant, and Math Center Expansion. Each of these items is explained in more detail below.	2018-02-05	Name: Textbooks Detail: Students need to continue to have access to textbooks in the Math Center. The statistics textbook costs $240.00 each and the Math Center needs at least 5 copies of the book. Status: Pending Name: Graphing Calculators such as TI 83/84 Detail: Students need to continue to have the calculator rental program in place in the Math Center. In a poll of statistics classes, 41% of students rent calculators from the Math Center. This would result in a need of roughly 227 graphing calculators per semester. The calculators cost between $100 and $120 each to replace if broken. Note: This information is only for statistics and doesn't even include other math classes where graphing calculators would be needed such as Pre-Calculus, College Algebra, Trigonometry, and any Calculus class. Status: Pending Name: Math Center Detail: The Math Center is an extremely important resource for statistics students. Students need to continue to be able to utilize the Math Center for tutorial services, a place to study, and for the use of their computers. There is such a demand for math tutoring on campus that the Math Center has extended hours and even hours on Saturday to accommodate more individuals. Note: The Math Center will even be more crowded

Any other comments?	No action type	Anonymous	One teacher commented that they would like to use Canvas more. They stated that it would be nice if instructors share their course in the Canvas Commons so that the course becomes more unified across the department. The teacher would also like to share assignments with other department members through Canvas. One teacher commented that they like the assessments and find value in administering the SLO	2018-02-05	

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH123 - Spring 2018					

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH123 - Spring 2018					

MATH131 - College Algebra

SLOs

CSLOs	» MATH131 SLO1 - Demonstrate a practical and conceptual understanding of a function. » MATH131 SLO2 - Demonstrate the ability to analyze functions using a variety of methods. » MATH131 SLO3 - Demonstrate knowledge of different types of functions in order to solve problems. » MATH131 SLO4 - Demonstrate the ability to communicate effectively about mathematics. » MATH131 SLO5 - Use appropriate technology to enhance mathematical thinking and understanding, to solve mathematical problems, and to judge the reasonableness of the results. » MATH131 SLO3 - Demonstrate knowledge of algebraic, logarithmic and exponential functions, one-to-one and inverse functions, elementary sequences and series, and conic sections in order to apply these skills to further topics and problems in this course.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Interpret and draw inferences from mathematical models such as formulas, graphs, tables and schematics. » MATH PSLO - Represent mathematical information symbolically, visually, numerically, verbally and in writing. » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus. » MATH PSLO - Use appropriate technologies to analyze and solve mathematical problems, verify the appropriateness and reasonableness of the solutions(s).
Mapped ILOs	**ILO** ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems. ILO 1 - Communication » ILO 1 - Communication: Communicate effectively using verbal, visual and written langua with clarity and purpose in workplace, community and academic contexts.

Assessments

Fall 2017

No data found

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH131 - Fall 2017					
What did the assessment data indicate about the strengths of your course?	No action type	Anonymous	Students are competent in using proper technology.	2018-02-15	
What did the assessment data indicate about the weaknesses of your course?	No action type	Anonymous	Students didn't seem to know how to interpret the information that they found using technology.	2018-02-15	
What changes have you made/do you plan to make based on the data?	No action type	Anonymous	Increase student participation in class. More examples about maximum and minimum value need to be added.	2018-02-15	
What resources are required to make these changes or to maintain your progress?	No action type	Anonymous	None	2018-02-15	
Any other comments?	No action type	Anonymous	None	2018-02-15	

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH131 - Spring 2018					

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH131 - Spring 2018					

MATH135 - Calculus with Applications

SLOs

CSLOs	» MATH135 SLO1 - Demonstrate the ability to analyze functions algebraically, numerically, and graphically; discuss the concept of continuity and evaluate limits. » MATH135 SLO2 - Demonstrate an understanding of the mathematical concept of the derivative. » MATH135 SLO3 - Demonstrate an understanding of the mathematical concept of integration. » MATH135 SLO4 - Demonstrate the ability to apply derivative and integration to formulate mathematical models and solve real world problems. » MATH135 SLO5 - Use appropriate technology to enhance mathematical thinking and understanding, to solve mathematical problems, and to judge the reasonableness of the results.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Interpret and draw inferences from mathematical models such as formulas, graphs, tables and schematics. » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus. » MATH PSLO - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models. » MATH PSLO - Use appropriate technologies to analyze and solve mathematical problems, verify the appropriateness and reasonableness of the solutions(s).
Mapped ILOs	**ILO** ILO 4 - Information & Technology Literacy » ILO 4B - Technology Literacy: Proficiency in a technology and the ability to choose the appropriate tools. ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems. ILO 2 - Critical Thinking & Problem Solving » ILO 2 - Critical Thinking & Problem Solving: Explore issues through various information sources; evaluate the credibility and significance of both the information and the source to arrive at a reasoned conclusion.

Assessments

Fall 2017

No data found

Spring 2018

No data found

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH135 - Fall 2017					
What did the assessment data indicate about the strengths of your course?	No action type	Anonymous	Based on the data, more than 50% of students meet or exceed the institutional standards. It doesn't seem like all students are comprehending the material in class but it is hard to say that students are doing poorly in class.	2018-02-06	
What did the assessment data indicate about the weaknesses of your course?	No action type	Anonymous	Since the percentage of "Institutional Below Standard" is in 40% range, there are quiet few students who are not doing well in class.	2018-02-06	
What changes have you made/do you plan to make based on the data?	No action type	Anonymous	No change at this moment.	2018-02-06	
What resources are required to make these changes or to maintain your progress?	No action type	Anonymous	N/A	2018-02-06	
Any other comments?	No action type	Anonymous	I do not know why the result is not good but we can think any other way to reach the institutional standard in the future.	2018-02-06	

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH135 - Spring 2018					

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH135 - Spring 2018					

MATH141 - Precalculus

SLOs

CSLOs	» MATH141 SLO1 - Develop problem-solving and mathematical modeling skills necessary for calculus. » MATH141 SLO2 - Demonstrate a practical and conceptual understanding of a function including inverse functions. » MATH141 SLO3 - Demonstrate knowledge of linear and exponential functions. » MATH141 SLO4 - Demonstrate proficiency in the use of trigonometric function by way of graphing, solving and manipulating. » MATH141 SLO5 - Demonstrate the ability to communicate effectively about mathematics. » MATH141 SLO6 - Use appropriate technology to enhance mathematical thinking and understanding, to solve mathematical problems, and to judge the reasonableness of the results.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Interpret and draw inferences from mathematical models such as formulas, graphs, tables and schematics. » MATH PSLO - Represent mathematical information symbolically, visually, numerically, verbally and in writing. » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus. » MATH PSLO - Use appropriate technologies to analyze and solve mathematical problems, verify the appropriateness and reasonableness of the solutions(s).
Mapped ILOs	**ILO** ILO 4 - Information & Technology Literacy » ILO 4B - Technology Literacy: Proficiency in a technology and the ability to choose the appropriate tools. ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems. ILO 2 - Critical Thinking & Problem Solving » ILO 2 - Critical Thinking & Problem Solving: Explore issues through various information sources; evaluate the credibility and significance of both the information and the source to arrive at a reasoned conclusion. ILO 1 - Communication » ILO 1 - Communication: Communicate effectively using verbal, visual and written langua with clarity and purpose in workplace, community and academic contexts.

Assessments

Fall 2017

No data found

No data found

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH141 - Fall 2017					
What did the assessment data indicate about the strengths of your course?	No action type	Anonymous	Based on the data, it seems like students understand the material in class.	2018-02-06	
What did the assessment data indicate about the weaknesses of your course?	No action type	Anonymous	I don't see the weakness of my course.	2018-02-06	
What changes have you made/do you plan to make based on the data?	No action type	Anonymous	No change at this moment.	2018-02-06	
What resources are required to make these changes or to maintain your progress?	No action type	Anonymous	N/A	2018-02-06	
Any other comments?	No action type	Anonymous	No comments.	2018-02-06	

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH141 - Spring 2018					

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request

Allan Hancock College >> Mathematics >> MATH141 - Spring 2018

MATH179A - Support for Math 123

SLOs

CSLOs	(None)
Mapped PSLOs	(None)
Mapped ILOs	(None)

MATH181 - Calculus 1

SLOs

CSLOs	» MATH181 SLO1 - Find limits in order to develop differentiation and integration. » MATH181 SLO2 - Demonstrate an understanding of continuity in order to apply the concept to other topics in calculus. » MATH181 SLO3 - Differentiate algebraic and trigonometric functions in order to solve applied problems. » MATH181 SLO4 - Solve applied problems involving differentiation. » MATH181 SLO5 - Use appropriate technology to enhance mathematical thinking and understanding, to solve mathematical problems, and to judge the reasonableness of the results.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Interpret and draw inferences from mathematical models such as formulas, graphs, tables and schematics. » MATH PSLO - Represent mathematical information symbolically, visually, numerically, verbally and in writing. » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus. » MATH PSLO - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models. » MATH PSLO - Use appropriate technologies to analyze and solve mathematical problems, verify the appropriateness and reasonableness of the solutions(s).
Mapped ILOs	**ILO** ILO 4 - Information & Technology Literacy » ILO 4B - Technology Literacy: Proficiency in a technology and the ability to choose the appropriate tools. ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems. ILO 2 - Critical Thinking & Problem Solving » ILO 2 - Critical Thinking & Problem Solving: Explore issues through various information sources; evaluate the credibility and significance of both the information and the source to arrive at a reasoned conclusion.

Assessments

Fall 2017

No data found

No data found

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH181 - Fall 2017					

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH181 - Spring 2018					

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH181 - Spring 2018					

MATH182 - Calculus 2

SLOs

CSLOs	» MATH182 SLO1 - Find integrals and solve differential equations using analytical, numerical, and graphical techniques. » MATH182 SLO2 - Analyze sequences and series to determine convergence or divergence and derive Taylor series to approximate functions. » MATH182 SLO3 - Model and solve applied problems using integration and differential equations. » MATH182 SLO4 - Use appropriate technology to enhance mathematical thinking and understanding, to solve mathematical problems, and to judge the reasonableness of the results.

Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Interpret and draw inferences from mathematical models such as formulas, graphs, tables and schematics. » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus. » MATH PSLO - Use appropriate technologies to analyze and solve mathematical problems, verify the appropriateness and reasonableness of the solutions(s).
Mapped ILOs	**ILO** ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems.

Assessments

Fall 2017

No data found

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH182 - Fall 2017					

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH182 - Spring 2018					

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH182 - Spring 2018					

MATH183 - Multivariable Calculus

SLOs

CSLOs	» MATH183 SLO1 - Demonstrate a practical and conceptual understanding of vectors in 3-space. » MATH183 SLO2 - Demonstrate a practical and conceptual understanding of differentiation in several variables in several contexts: graphically, numerically, analytically and verbally. » MATH183 SLO3 - Demonstrate a practical and conceptual understanding of integrations in several contexts: graphically, numerically, analytically and verbally. » MATH183 SLO4 - Develop problem solving and math modeling skills. » MATH183 SLO5 - Use appropriate technology to enhance mathematical thinking and understanding, to solve mathematical problems, and to judge the reasonableness of the results.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Interpret and draw inferences from mathematical models such as formulas, graphs, tables and schematics. » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus. » MATH PSLO - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models. » MATH PSLO - Use appropriate technologies to analyze and solve mathematical problems, verify the appropriateness and reasonableness of the solutions(s).
Mapped ILOs	**ILO** ILO 4 - Information & Technology Literacy » ILO 4B - Technology Literacy: Proficiency in a technology and the ability to choose the appropriate tools. ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems. ILO 2 - Critical Thinking & Problem Solving » ILO 2 - Critical Thinking & Problem Solving: Explore issues through various information sources; evaluate the credibility and significance of both the information and the source to arrive at a reasoned conclusion.

Assessments

Fall 2017

No data found

No data found

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH183 - Fall 2017					
What did the assessment data indicate about the strengths of your course?	No action type	Anonymous	They did well on SLO 2.	2018-02-20	
What did the assessment data indicate about the weaknesses of your course?	No action type	Anonymous	Oddly, they did not do well on SLO 1, which is the easier of the two. One instructor said this was her weakest 183 class ever, but then they did ok on SLO 2 so who knows...	2018-02-20	
What changes have you made/do you plan to make based on the data?	No action type	Anonymous	We need to make sure not to gloss over the "easy" material, mistakenly assuming that the students will easily understand it.	2018-02-20	
What resources are required to make these changes or to maintain your progress?	No action type	Anonymous	N/A	2018-02-20	
Any other comments?	No action type	Anonymous	N/A	2018-02-20	

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH183 - Spring 2018					

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH183 - Spring 2018					

MATH184 - Linear Algebra Diff Equations

SLOs

CSLOs	» MATH184 SLO1 - Demonstrate a practical and conceptual understanding of systems of linear equations. » MATH184 SLO2 - Demonstrate a practical and conceptual understanding of vector spaces. » MATH184 SLO3 - Demonstrate a practical and conceptual understanding of linear transformations. » MATH184 SLO4 - Solve a variety of first order differential equations. » MATH184 SLO5 - Solve a variety of second order differential equations. » MATH184 SLO6 - Solve systems of differential equations. » MATH184 SLO7 - Develop problem solving and math modeling skills.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Interpret and draw inferences from mathematical models such as formulas, graphs, tables and schematics. » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus. » MATH PSLO - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
Mapped ILOs	**ILO** ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems.

Assessments

Fall 2017

No data found

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH184 - Fall 2017					
What did the assessment data indicate about the strengths of your course?	No action type	Anonymous	N/A	2019-02-06	
What did the assessment data indicate about the weaknesses of your course?	No action type	Anonymous	N/A	2019-02-06	
What changes have you made/do you plan to make based on the data?	No action type	Anonymous	N/A	2019-02-06	
What resources are required to make these changes or to maintain your progress?	No action type	Anonymous	N/A	2019-02-06	
Any other comments?	No action type	Anonymous	N/A	2019-02-06	

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH184 - Spring 2018					
What did the assessment data indicate about the strengths of your program?	No action type	Anonymous	N/A	2019-02-06	
What did the assessment data indicate about the challenges of your program?	No action type	Anonymous	N/A	2019-02-06	
What changes have you made/do you plan to make based on the data to improve student learning and service?	No action type	Anonymous	N/A	2019-02-06	
What resources are required to make these changes or to maintain your progress?	No action type	Anonymous	N/A	2019-02-06	
Any other comments?	No action type	Anonymous	N/A	2019-02-06	

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH184 - Spring 2018					
What did the assessment data indicate about the strengths of your course?	No action type	Anonymous	N/A	2019-02-06	
What did the assessment data indicate about the weaknesses of your course?	No action type	Anonymous	N/A	2019-02-06	
What changes have you made/do you plan to make based on the data?	No action type	Anonymous	N/A	2019-02-06	
What resources are required to make these changes or to maintain your progress?	No action type	Anonymous	N/A	2019-02-06	
Any other comments?	No action type	Anonymous	N/A	2019-02-06	

MATH189 - Independent Projects

SLOs

CSLOs	(None)
Mapped PSLOs	(None)
Mapped ILOs	(None)

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH189 - Fall 2017					

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH189 - Spring 2018					

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH189 - Spring 2018					

MATH309 - Algebra and Math Literacy

SLOs

CSLOs	» MATH309 SLO1 - Create and/or evaluate mathematical models that translate from real life situation/application. » MATH309 SLO2 - Analyze/synthesize a variety of problems and determine appropriate strategies to produce accurate results. » MATH309 SLO3 - Demonstrate the ability to communicate effectively about mathematics. » MATH309 SLO4 - Understand and use multiple representations of problems. » MATH309 SLO5 - Demonstrate an understanding and the ability to use functions, graphs, statistics, geometry and numeracy skills.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Represent mathematical information symbolically, visually, numerically, verbally and in writing. » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus.

	» MATH PSLO - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
Mapped ILOs	**ILO** ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems. ILO 2 - Critical Thinking & Problem Solving » ILO 2 - Critical Thinking & Problem Solving: Explore issues through various information sources; evaluate the credibility and significance of both the information and the source to arrive at a reasoned conclusion. ILO 1 - Communication » ILO 1 - Communication: Communicate effectively using verbal, visual and written langua with clarity and purpose in workplace, community and academic contexts.

Assessments

Spring 2018

No data found

No data found

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH309 - Fall 2017					

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH309 - Spring 2018					
What did the assessment data indicate about the strengths of your program?	No action type	Anonymous	na	2019-02-11	
What did the assessment data indicate about the challenges of your program?	No action type	Anonymous	na	2019-02-11	
What changes have you made/do you plan to make based on the data to improve student learning and service?	No action type	Anonymous	na	2019-02-11	
What resources are required to make these changes or to maintain your progress?	No action type	Anonymous	na	2019-02-11	
Any other comments?	No action type	Anonymous	na	2019-02-11	

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH309 - Spring 2018					
What did the assessment data indicate about the strengths of your course?	No action type	Anonymous	No assessment this semester due to updated SLOs	2019-02-11	
What did the assessment data indicate about the weaknesses of your course?	No action type	Anonymous	No assessment this semester due to updated SLOs	2019-02-11	
What changes have you made/do you plan to make based on the data?	No action type	Anonymous	No assessment this semester due to updated SLOs	2019-02-11	
What resources are required to make these changes or to maintain your progress?	No action type	Anonymous	No assessment this semester due to updated SLOs	2019-02-11	
Any other comments?	No action type	Anonymous	No assessment this semester due to updated SLOs	2019-02-11	

MATH311 - Algebra 1

SLOs

CSLOs	» MATH311 SLO1 - Apply the rules of signed numbers, the order of operations agreement, and the rules for evaluating and simplifying algebraic expressions. » MATH311 SLO2 - Solve first degree equations and inequalities in one variable in order to solve problems that can be modeled by these relationships. » MATH311 SLO3 - Plot points and graph linear equations on a rectangular coordinate system to solve problems. » MATH311 SLO4 - Determine the equation of a given line in order to solve application problems. » MATH311 SLO5 - Demonstrate the ability to recognize, evaluate and simplify polynomial expression and to use factoring to solve quadratic equations.
	PSLO Mathematics Program Outcomes

Mapped PSLOs	» MATH PSLO - Interpret and draw inferences from mathematical models such as formulas, graphs, tables and schematics. » MATH PSLO - Represent mathematical information symbolically, visually, numerically, verbally and in writing. » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus.
Mapped ILOs	**ILO** ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems.

Assessments

Fall 2017

No data found

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH311 - Fall 2017					

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH311 - Spring 2018					
What did the assessment data indicate about the strengths of your program?	No action type	Anonymous	NA	2019-02-11	
What did the assessment data indicate about the challenges of your program?	No action type	Anonymous	NA	2019-02-11	
What changes have you made/do you plan to make based on the data to improve student learning and service?	No action type	Anonymous	NA	2019-02-11	
What resources are required to make these changes or to maintain your progress?	No action type	Anonymous	NA	2019-02-11	
Any other comments?	No action type	Anonymous	NA	2019-02-11	

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH311 - Spring 2018					
What did the assessment data indicate about the strengths of your course?	No action type	Anonymous	No assessment this semester due to updated SLOs	2019-02-11	
What did the assessment data indicate about the weaknesses of your course?	No action type	Anonymous	No assessment this semester due to updated SLOs	2019-02-11	
What changes have you made/do you plan to make based on the data?	No action type	Anonymous	No assessment this semester due to updated SLOs	2019-02-11	
What resources are required to make these changes or to maintain your progress?	No action type	Anonymous	No assessment this semester due to updated SLOs	2019-02-11	
Any other comments?	No action type	Anonymous	No assessment this semester due to updated SLOs	2019-02-11	

MATH313 - Algebra 1: Part 1

SLOs

CSLOs	» MATH313 SLO1 - Learn time management skills, math study skills, problem-solving strategies, learning style preferences, and test-taking strategies to successfully learn algebra. » MATH313 SLO2 - Identify symptoms of and strategies for overcoming math anxiety. » MATH313 SLO3 - Apply the rules of signed numbers, the order of operations agreement, and the rules for simplifying variable expressions in order to have the basic skills necessary for successful completion of the other topics in the course. » MATH313 SLO4 - Solve first degree equations and solve and graph linear inequalities in one variable in order to solve problems that can be modeled by these types of relationships.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus. » MATH PSLO - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.

Mapped ILOs	**ILO** ILO 7 - Personal Responsibility & Development » ILO 7 - Personal Responsibility & Development: Take the initiative and responsibility assess your own actions with regard to physical wellness, learning opportunities, career planning, creative contribution to the community and ethical integrity in the home, workplace and community. ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems.

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH313 - Fall 2017					

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH313 - Spring 2018					

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH313 - Spring 2018					

MATH314 - Algebra 1: Part 2

SLOs

CSLOs	» MATH314 SLO1 - Utilize time management skills, math study skills, problem-solving strategies, and test-taking strategies to successfully learn algebra. » MATH314 SLO2 - Plot points and graph linear equations and inequalities on a rectangular coordinate system in order to use these skills to solve related problems in this and related courses. » MATH314 SLO3 - Demonstrate the ability to recognize, evaluate and simplify polynomial expressions and to use factoring to solve quadratic equations. » MATH314 SLO4 - Solve word problems at eh elementary algebra level.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus. » MATH PSLO - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
Mapped ILOs	**ILO** ILO 7 - Personal Responsibility & Development » ILO 7 - Personal Responsibility & Development: Take the initiative and responsibility assess your own actions with regard to physical wellness, learning opportunities, career planning, creative contribution to the community and ethical integrity in the home, workplace and community. ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems.

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH314 - Fall 2017					

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH314 - Spring 2018					

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH314 - Spring 2018					

MATH321 - First Year Geometry

SLOs

CSLOs	» MATH321 SLO1 - Demonstrate a practical and conceptual understanding of geometric terms, postulates and theorems. » MATH321 SLO2 - Demonstrate the ability to use deductive or inductive reasoning to read, formulate, recognize, verbalize or construct a valid geometric proof or argument.

CSLOs	» MATH321 SLO3 - Develop problem solving and math modeling skills that utilize knowledge of geometric formulas or concepts to solve real world problems. » MATH321 SLO4 - Use appropriate geometric devices, instruments or tools to perform geometric constructions that assist with understanding properties and concepts.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus. » MATH PSLO - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models. » MATH PSLO - Use appropriate technologies to analyze and solve mathematical problems, verify the appropriateness and reasonableness of the solutions(s).
Mapped ILOs	**ILO** ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems. ILO 2 - Critical Thinking & Problem Solving » ILO 2 - Critical Thinking & Problem Solving: Explore issues through various information sources; evaluate the credibility and significance of both the information and the source to arrive at a reasoned conclusion.

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH321 - Fall 2017					

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH321 - Spring 2018					

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH321 - Spring 2018					

MATH331 - Algebra 2

SLOs

CSLOs	» MATH331 SLO1 - Demonstrate the ability to recognize, evaluate, and simplify algebraic expressions. » MATH331 SLO2 - Differentiate between types of equations & types of systems and apply appropriate methods to solve them. » MATH331 SLO3 - Graph relations & functions and demonstrate an understanding of function related concepts. » MATH331 SLO4 - Interpret and apply appropriate methods to solve applications. » MATH331 SLO5 - Solve systems of linear equations in order to solve application problems in this and related courses.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Represent mathematical information symbolically, visually, numerically, verbally and in writing. » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus. » MATH PSLO - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
Mapped ILOs	**ILO** ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems.

Assessments

Fall 2017

No data found

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH331 - Fall 2017					

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH331 - Spring 2018					

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH331 - Spring 2018					

MATH333 - Algebra 2: Part 1

SLOs

CSLOs	» MATH333 SLO1 - Utilize time management skills, math study skills, problem-solving strategies, learning style preferences, and test-taking strategies to successfully learn algebra. » MATH333 SLO2 - Demonstrate the ability to recognize, evaluate, and simplify algebraic expressions. » MATH333 SLO3 - Demonstrate the ability to recognize different forms of linear equations and use appropriate methods to solve them. » MATH333 SLO4 - Differentiate between types of linear equations, linear inequalities and types of systems, and apply appropriate methods to solve them.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Represent mathematical information symbolically, visually, numerically, verbally and in writing. » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus.
Mapped ILOs	**ILO** ILO 7 - Personal Responsibility & Development » ILO 7 - Personal Responsibility & Development: Take the initiative and responsibility assess your own actions with regard to physical wellness, learning opportunities, career planning, creative contribution to the community and ethical integrity in the home, workplace and community. ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems. ILO 2 - Critical Thinking & Problem Solving » ILO 2 - Critical Thinking & Problem Solving: Explore issues through various information sources; evaluate the credibility and significance of both the information and the source to arrive at a reasoned conclusion.

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH333 - Fall 2017					

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH333 - Spring 2018					

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH333 - Spring 2018					

MATH334 - Algebra 2: Part 2

SLOs

CSLOs	» MATH334 SLO1 - Utilize time management skills, math study skills, problem-solving strategies, learning style preferences, and test-taking strategies to successfully learn algebra. » MATH334 SLO2 - Demonstrate an understanding of function related concepts. » MATH334 SLO3 - Demonstrate an understanding of the concepts of non-linear quadratic function and solve applications using the quadratic function. » MATH334 SLO4 - Demonstrate an understanding of inverse functions and solve applications using the inverse of a function.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Represent mathematical information symbolically, visually, numerically, verbally and in writing. » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus. » MATH PSLO - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
	ILO

Mapped ILOs	ILO 7 - Personal Responsibility & Development » ILO 7 - Personal Responsibility & Development: Take the initiative and responsibility assess your own actions with regard to physical wellness, learning opportunities, career planning, creative contribution to the community and ethical integrity in the home, workplace and community. ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems.

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH334 - Fall 2017					

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH334 - Spring 2018					

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH334 - Spring 2018					

MATH353 - Mathematics Lab

SLOs

CSLOs	» MATH353 SLO1 - Comprehend and use mathematical concepts at levels appropriate to their credit or noncredit mathematical courses. » MATH353 SLO2 - Use mathematical terminology in order to communicate areas of need effectively. » MATH353 SLO3 - Successfully complete concurrently enrolled class. » MATH353 SLO4 - Take advantage of the resources in the Math Center.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Represent mathematical information symbolically, visually, numerically, verbally and in writing. » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus. » MATH PSLO - Use appropriate technologies to analyze and solve mathematical problems, verify the appropriateness and reasonableness of the solutions(s).
Mapped ILOs	**ILO** ILO 7 - Personal Responsibility & Development » ILO 7 - Personal Responsibility & Development: Take the initiative and responsibility assess your own actions with regard to physical wellness, learning opportunities, career planning, creative contribution to the community and ethical integrity in the home, workplace and community. ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems. ILO 1 - Communication » ILO 1 - Communication: Communicate effectively using verbal, visual and written langua with clarity and purpose in workplace, community and academic contexts.

MATH511 - Fundamentals of Arithmetic

SLOs

CSLOs	» MATH511 SLO1 - Compute with and understand the meaning of whole numbers, integers, fractions, decimals, percents, ratios, and rates. » MATH511 SLO2 - Use arithmetic to solve practical problems and to meet personal needs. » MATH511 SLO3 - Estimate and judge the reasonableness of answers. » MATH511 SLO4 - Understand the concept of a variable and its role in an algebraic expression and a simple equation.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Represent mathematical information symbolically, visually, numerically, verbally and in writing. » MATH PSLO - Estimate and check mathematical results for reasonableness. » MATH PSLO - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
Mapped ILOs	**ILO** ILO 5 - Quantitative Literacy

	» ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems.

MATH513 - Fund. of Arithmetic: Part 1

SLOs

CSLOs	» MATH513 SLO1 - Learn a variety of learning and study skills essential for success in the study of mathematics. » MATH513 SLO2 - Compute with and understand the meaning of whole numbers and fractions. » MATH513 SLO3 - Estimate and judge the reasonableness of answers. » MATH513 SLO4 - Take advantage of technology and lab resources that will support student success.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus. » MATH PSLO - Estimate and check mathematical results for reasonableness. » MATH PSLO - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
Mapped ILOs	**ILO** ILO 7 - Personal Responsibility & Development » ILO 7 - Personal Responsibility & Development: Take the initiative and responsibility assess your own actions with regard to physical wellness, learning opportunities, career planning, creative contribution to the community and ethical integrity in the home, workplace and community. ILO 4 - Information & Technology Literacy » ILO 4B - Technology Literacy: Proficiency in a technology and the ability to choose the appropriate tools. ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems.

MATH514 - Fund. of Arithmetic: Part 2

SLOs

CSLOs	» MATH514 SLO1 - Compute with and understand the meaning of decimals, percents, ratios, and rates. » MATH514 SLO2 - Use arithmetic to solve practical problems and to meet personal needs. » MATH514 SLO3 - Estimate and judge the reasonableness of answers. » MATH514 SLO4 - Understand the concept of a variable and its role in an algebraic expression and a simple equation.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Represent mathematical information symbolically, visually, numerically, verbally and in writing. » MATH PSLO - Estimate and check mathematical results for reasonableness. » MATH PSLO - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
Mapped ILOs	**ILO** ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems.

MATH521 - Foundations of Mathematics

SLOs

CSLOs	» MATH521 SLO1 - Estimate and judge the reasonableness of answers. » MATH521 SLO2 - Perform arithmetic operations on real numbers to solve practical problems. » MATH521 SLO3 - Apply percentages or proportional reasoning to solve problems. » MATH521 SLO4 - Perform basic algebraic operations to simplify and evaluate expressions and to solve simple linear equations. » MATH521 SLO5 - Communicate effectively about mathematics.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Represent mathematical information symbolically, visually, numerically, verbally and in writing. » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus. » MATH PSLO - Estimate and check mathematical results for reasonableness.
	ILO ILO 5 - Quantitative Literacy

Mapped ILOs	» ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems. ILO 1 - Communication » ILO 1 - Communication: Communicate effectively using verbal, visual and written langua with clarity and purpose in workplace, community and academic contexts.

Assessments

Fall 2017

No data found

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH521 - Fall 2017					

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH521 - Spring 2018					

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH521 - Spring 2018					

MATH531 - Pre-Algebra

SLOs

CSLOs	» MATH531 SLO1 - Estimate and judge the reasonableness of answers. » MATH531 SLO1 - Solve a variety of real world problems. » MATH531 SLO2 - Perform arithmetic operations on real numbers to solve practical problems. » MATH531 SLO3 - Apply percentages or proportional reasoning to solve problems. » MATH531 SLO4 - Perform basic algebraic operations to simplify and evaluate expressions and to solve simple linear equations. » MATH531 SLO5 - Communicate effectively about mathematics.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Represent mathematical information symbolically, visually, numerically, verbally and in writing. » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus. » MATH PSLO - Estimate and check mathematical results for reasonableness. » MATH PSLO - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
Mapped ILOs	**ILO** ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems. ILO 1 - Communication » ILO 1 - Communication: Communicate effectively using verbal, visual and written langua with clarity and purpose in workplace, community and academic contexts.

Assessments

Fall 2017

No data found

Action Plans

Fall 2017

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH531 - Fall 2017					

Spring 2018

2017 Context Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH531 - Spring 2018					

2017 Course Improvement Plan

Expected Action	Action Type	Respondent	Action Taken	Date	Resource Request
Allan Hancock College >> Mathematics >> MATH531 - Spring 2018					

MATH579A - Foundations of Mathematics

SLOs

	» MATH579A SLO1 - Estimate and judge the reasonableness of answers.

CSLOs	» MATH579A SLO2 - Perform arithmetic operations on real numbers. » MATH579A SLO3 - Perform basic algebraic operations to simplify and evaluate expressions and to solve simple linear equations. » MATH579A SLO4 - Communicate effectively about mathematics.
Mapped PSLOs	**PSLO** Mathematics Program Outcomes » MATH PSLO - Represent mathematical information symbolically, visually, numerically, verbally and in writing. » MATH PSLO - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems from arithmetic through calculus. » MATH PSLO - Estimate and check mathematical results for reasonableness.
Mapped ILOs	**ILO** ILO 5 - Quantitative Literacy » ILO 5 - Quantitative Literacy: Use mathematical concepts and models to analyze and solve real life issues or problems. ILO 1 - Communication » ILO 1 - Communication: Communicate effectively using verbal, visual and written langua with clarity and purpose in workplace, community and academic contexts.

ARTICULATION STATUS OF COURSE

MATH 100 The Nature of Modern Mathematics (3) **11/17/20**

CATALOG DESCRIPTION

A study of contemporary topics in mathematics including statistics, social choice, management science, and geometric and algebraic patterns.

AHC Special Notes	Articulation Institution	Prefix	Title
	Cal Poly Pomona	MAT 1910	Survey of Mathematics
	Cal Poly San Luis Obispo	MATH 112	The Nature of Modern Math
	CSU Bakersfield	MATH 1209	Statistics in the Modern World
	CSU Channel Islands	MATH 108	Mathematical Thinking
	CSU Chico	MATH 101	Patterns of Mathematical Thought
	CSU Dominguez Hills	- - - - - - - - - - - - - - - - - - - -	Articulation Denied [MAT 271, Foundations of Higher Mathematics]
	CSU East Bay	**Need To Request**	Need to request Artic Review 11/2020: MATH 1110,The Nature of Mathematics
	CSU Fresno	MATH 45	What is Mathematics
	CSU Fullerton	MATH 110	Liberal Arts Mathematics
	CSU Long Beach	MATH 103	Mathematical Ideas
	CSU Los Angeles	**Need To Request**	Need to Request 11/2020 [MATH 1000,Introduction to College Mathematics]
	CSU Monterey Bay	- - - - - - - - - - - - - - - - - - - -	No Equivalent Course
	CSU Northridge	MATH 131	Mathematical Ideas
	CSU Sacramento	- - - - - - - - - - - - - - - - - - - -	No Equivalent Course
	CSU San Bernardino	MATH 115	The Ideas of Mathematics
	CSU San Marcos	**Request**	**MATH 100, Mathematical Ideas (3)**
	CSU Stanislaus	**Request Again/Pending**	**Requested October 2007** [MATH 1000, Excursions into Mathematics]
	Humboldt State	MATH 103	Contemporary Mathematics
	San Diego State	MATH 118	Topics in Mathematics
	San Francisco State	- - - - - - - - - - - - - - - - - - - -	No Equivalent Course
	San Jose State	**Request**	**MATH 10A, Mathematics in Art and Music**
	Sonoma State	- - - - - - - - - - - - - - - - - - - -	Articulation Denied [MATH 104, Introduction to Modern Mathematics]
	UC Transferable	No	
	UC Berkeley		
	UC Davis		
	UC Irvine		
	UC Los Angeles		
	UC Merced		
	UC Riverside		
	UC San Diego		

	UC Santa Barbara		
	UC Santa Cruz		
	CSU GE	B4	
	IGETC		

MATH 105 Math for Teachers (4) **11/17/10**

CATALOG DESCRIPTION
A study of basic concepts of mathematics required for the liberal studies major and the multiple subject teaching credential. It is recommended for the current elementary and junior high school teachers. It is also recommended for the career technical single subject education credential candidate. Topics include development of critical thinking, set theory, logic, numeration systems, the set of integers, elementary number theory, the set of rational numbers, the set of real numbers, and measurement of geometric figures.

AHC Special Notes	Articulation Institution	Prefix	Title
	Cal Poly Pomona	- - - - - - - - - - - - - - - - - - -	**Course must be taken after transfer** [MAT 1940, Mathematical Concepts for Elementary School Teachers]
	Cal Poly San Luis Obispo	MATH 227	Mathematics for Elementary Teaching I (4)
	CSU Bakersfield	MATH 2120	Number Systems and Algebraic Thinking for Preservice Elementary Teachers (5)
	CSU Channel Islands	MATH 208	Modern Math for Elementary Teachers – Numbers and Problem Solving I
	CSU Chico	MATH 110	Concepts & Structure of Mathematics
	CSU Dominguez Hills	MAT 107	Mathematics for Elementary School Teachers: Real Numbers
	CSU East Bay	MATH 2011	Number Systems
	CSU Fresno	MATH 10A	Structure and Concepts in Mathematics I
	CSU Fullerton	- - - - - - - - - - - - - - - - - - - -	**Upper Division Equivalent Course** [MATH 203, Fundamental Concepts of Elementary Mathematics]
	CSU Long Beach	MTED 110	The Real Number System for Elementary and Middle School Teachers
	CSU Los Angeles	**Need To Request**	Need to Request 11/2020 [MATH 1100, Foundations - Real Number System]
	CSU Monterey Bay	MATH 100	Quantitative Literacy
	CSU Northridge	MATH 210	Basic Number Concepts
	CSU Sacramento	- - - - - - - - - - - - - - - - - - - -	***Articulation Denied* October 2007** [MATH 17, An Intro to Exploration, Conjuncture, & Proof in Math)
	CSU San Bernardino	- - - - - - - - - - - - - - - - - - - -	**Upper Division Equivalent Course** [MATH 301 A,B & C, Fundamental Concepts of Mathematics for Educators]
	CSU San Marcos	MATH 210	Mathematics for Elementary Teaching I
	CSU Stanislaus	**Request Again/Pending**	**Requested October 2007 [MATH 1030, Elementary Foundations of Mathematics I]**

	Humboldt State	- -	**Upper Division Equivalent Course** [MATH 308 B & C, Mathematics for Elementary Educators]
	San Diego State	MATH 210	Number Systems in Elementary Math
	San Francisco State	MATH 165	Concepts of Number System
	San Jose State	MATH 12	Number Systems
	Sonoma State	**Request**	**MATH 300, Elementary Number System (Course Content Credit Only)**
	UC Transferable	Yes	
	UC Berkeley	- -	**No Equivalent Course**
	UC Davis	- -	**No Equivalent Course**
	UC Irvine	- -	**No Equivalent Course**
	UC Los Angeles	- -	**No Equivalent Course**
	UC Merced	- -	**No Equivalent Course**
	UC Riverside	- -	**No Equivalent Course**
	UC San Diego	- -	**No Equivalent Course**
	UC Santa Barbara	- -	**Upper Division Equivalent Course** [MATH 100A, Mathematics for Elementary Teaching]
	UC Santa Cruz	- -	**No Equivalent Course**
	C-ID	C-ID MATH 120	Mathematical Concepts for Elementary School Teachers - Number Systems
	CSU GE		
	IGETC		

MATH 121 Trigonometry (3) **11/17/20**

CATALOG DESCRIPTION

The study of directed angles, degree/radian measures of angles, trigonometric functions of angles and of numbers, solutions of right and oblique triangles, identities, functions of composite angles, graphs, equations, inverse functions, vectors and complex numbers.

AHC Special Notes	Articulation Institution	Prefix	Title
	Cal Poly Pomona	MAT 1060	Trigonometry
Or MATH 141 +MATH 131	Cal Poly San Luis Obispo	MATH 119 Or MATH 118 & 119	Pre-Calculus Trig. Or Pre-Calculus Algebra and Pre-Calculus Trig.
	CSU Bakersfield	MATH 1060	Pre-Calculus II
	CSU Channel Islands	- -	No Equivalent Course
	CSU Chico	MATH 118	Trigonometry
	CSU Dominguez Hills	- -	No Equivalent Course
Or MATH 141	CSU East Bay	MATH 1300	Trigonometry and Analytic Geometry
  + MATH 131	CSU Fresno	MATH 5 Or MATH 6	Trigonometry Or Precalculus
	CSU Fullerton	- -	No Equivalent Course
	CSU Long Beach	MATH 111	Precalculus Trigonometry
	CSU Los Angeles	- -	No Equivalent Course
	CSU Monterey Bay	MATH 109	Trigonometry
+ MATH 131	CSU Northridge	MATH 104	Trigonometry & Analytic Geometry
	CSU Sacramento	- -	No Equivalent Course
+ MATH 131	CSU San Bernardino	MATH 120	Pre-Calculus Mathematics
	CSU San Marcos	- -	No Equivalent Course
	CSU Stanislaus	**Request Again/Pending**	**Requested October 2007** **[MATH 1080, Trigonometry]**
  + MATH 131	Humboldt State	MATH 101T or MATH 102	Trigonometry or Algebra and Elementary Functions
+ MATH 131	San Diego State	MATH 141	Pre-calculus
	San Francisco State	- -	No Equivalent Course
+ MATH 131	San Jose State	**Request**	**MATH 18B, Trigonometry**
	Sonoma State	- -	No Equivalent Course
	UC Transferable	No	
	UC Berkeley		
	UC Davis		
	UC Irvine		
	UC Los Angeles		
	UC Merced		
	UC Riverside		

	UC San Diego		
	UC Santa Barbara		
	UC Santa Cruz	CAN MATH 8	
	CSU GE		
	IGETC		

MATH 123 Elementary Statistics (4) **11/17/20**

CATALOG DESCRIPTION

A study of the descriptive and inferential statistics including applications in the behavioral and natural sciences. Topics include classification and analysis of data, probability, distributions, sampling, the binomial, normal, t, F, and chi-square distributions, confidence testing, hypothesis testing, analysis of variance and non-parametric methods. Calculators and/or computers will be used throughout.

AHC Special Notes	Articulation Institution	Prefix	Title
	Cal Poly Pomona	STA 1200	Statistics with Applications
	Cal Poly San Luis Obispo	STAT 217 Or STAT 218 Or STAT 251	Intro to Statistical Concepts & Methods Or Applied Statistics for the Life Sciences Or Statistical Inference for Management I
	CSU Bakersfield	MATH 2200	Introduction to Statistics Concepts and Methods
	CSU Channel Islands	MATH 201 MATH 202 BIOL 203	Elementary Statistics Biostatistics Quantitative Methods for Biology
	CSU Chico	MATH 105	Statistics
	CSU Dominguez Hills	MAT 131 Or PSY 230 Or SOC 220	Elementary Statistics and Probability Or Elementary Statistical Analysis in Psychology Or Analytical Statistics for Sociology
	CSU East Bay	STAT 1000	Elements of Probability and Statistics
	CSU Fresno	DS 73 or MATH 11	Statistical Analysis I or Elementary Statistics
	CSU Fullerton	MATH 120	Introduction to Probability and Statistics
	CSU Long Beach	PSY 110 Or E T 202 And E T 202L Or SOC 250 Or C/LA 250 Or STAT 118	Introductory Statistics Or Probability and Statistics for Technology And Probability and Statistics for Technology Lab Or Elementary Statistics (4) Or Elementary Statistics (4) Or Introductory Business Statistics (3)
	CSU Los Angeles	ECON/MATH 1090 Or MATH 2740	Quantitative Reasoning and Statistics Or Introduction to Statisitcs
	CSU Monterey Bay	STAT 200	Statistical Courses

		or STAT 204	or Business Statistics
	CSU Northridge	MATH 140	Introductory Statistics
	CSU Sacramento	STAT 1	Introduction to Statistics
	CSU San Bernardino	MATH 165 or PSYC 210 or SSCI 215 or SCM 210	Into Stats & Hypothesis Testing or Psychological Statistics or Statistics for Social Sciences or Applied Business Statistics
	CSU San Marcos	MATH 242	Introduction to Statistics
	CSU Stanislaus	MATH 1600	Statistics
	Humboldt State	STAT 108 Or STAT 109	Elementary Statistics Or Introductory Biostatistics
	San Diego State	STAT 250	Basic Statistical Methods
	San Francisco State	MATH 124 or DS 212	Elementary Statistics or Business Statistics I
	San Jose State	STAT 95 Or BUS2 90	Elementary Statistics Or Business Statistics
	Sonoma State	MATH 165	Elementary Statistics
	UC Transferable	Yes	
	UC Berkeley	STAT 2	Introduction to Statistics
	UC Davis	STATIST 13	Elementary Statistics
	UC Irvine	MATH 7	Basic Statistics
	UC Los Angeles		
	UC Merced	ECON 10	Statistical Inference
	UC Riverside	STAT 48	Statistics for Business
	UC San Diego	PSYC 60	Introduction to Statistics
	UC Santa Barbara	PSTAT 5A or PSTAT 5E or PSY 5	Statistics or Statistics w/ Economics & Business Applications or Introductory Statistics
	UC Santa Cruz	STAT 5 or PSYC 2	Statistics or Introduction to Psychological Statistics
	C-ID	C-ID MATH 110	Introduction to Statistics
	CSU GE	B4	
	IGETC	2	

MATH 131 College Math (3) **11/17/20**

CATALOG DESCRIPTION

College level course in algebra for majors in science, technology, engineering, and mathematics: polynomial, rational, radical, exponential, absolute value, and logarithmic functions; systems of equations; theory of polynomial equations; analytic geometry.

AHC Special Notes	Articulation Institution	Prefix	Title
	Cal Poly Pomona	MAT 1050	College Algebra
Or MATH 141 + MATH 121	Cal Poly San Luis Obispo	MATH 118 Or MATH 118 & 119	Pre-Calculus Algebra Or Pre-Calculus Algebra and Pre-Calculus Trig
	CSU Bakersfield	MATH 1050	Pre-calculus I
	CSU Channel Islands	MATH 101	College Algebra
	CSU Chico	- - - - - - - - - - - - - - - - - - -	No Equivalent Course
	CSU Dominguez Hills	- - - - - - - - - - - - - - - - - - -	No Equivalent Course
Or MATH 141	CSU East Bay	MATH 1130	College Algebra
+ MATH 121	CSU Fresno	MATH 6	Pre-calculus
	CSU Fullerton	MATH 115	College Algebra
Or MATH 141	CSU Long Beach	MATH 113	PreCalculus Algebra
	CSU Los Angeles	- - - - - - - - - - - - - - - - - - -	No Equivalent Course
	CSU Monterey Bay	- - - - - - - - - - - - - - - - - - -	No Equivalent Course
+ MATH 121	CSU Northridge	MATH 102	College Algebra
	CSU Sacramento	- - - - - - - - - - - - - - - - - - - -	No Equivalent Course
  + MATH 121	CSU San Bernardino	MATH 110 or MATH 120	College Algebra or Pre-Calculus Mathematics
	CSU San Marcos	MATH 115	College Algebra
	CSU Stanislaus	Request	MATH 1070, College Algebra (3)
+ MATH 121	Humboldt State	MATH 102	Algebra and Elementary Functions
+ MATH 121	San Diego State	MATH 141	Pre-calculus
	San Francisco State	- - - - - - - - - - - - - - - - - - -	No Equivalent Course
	San Jose State	MATH 18A	College Algebra
	Sonoma State	- - - - - - - - - - - - - - - - - - -	No Equivalent Course
	UC Transferable	Yes	
	UC Berkeley	- - - - - - - - - - - - - - - - - - -	No Equivalent Course
	UC Davis	- - - - - - - - - - - - - - - - - - -	No Equivalent Course
	UC Irvine	- - - - - - - - - - - - - - - - - - -	No Equivalent Course
	UC Los Angeles	- - - - - - - - - - - - - - - - - - -	No Equivalent Course
	UC Merced	- - - - - - - - - - - - - - - - - - -	No Equivalent Course
	UC Riverside	- - - - - - - - - - - - - - - - - - -	No Equivalent Course
	UC San Diego	- - - - - - - - - - - - - - - - - - -	No Equivalent Course
	UC Santa Barbara	- - - - - - - - - - - - - - - - - - -	No Equivalent Course
	UC Santa Cruz	MATH 2	College Algebra for Calculus

	CSU GE	B4	
	IGETC	2	

CATALOG DESCRIPTION

Techniques of calculus as applied to problem-solving in business and social, behavioral, and natural sciences, including limits, continuity, differentiation and integration in one and several dimensions, optimization, transcendental functions, and the use of computing technology.

AHC Special Notes	Articulation Institution	Prefix	Title
	Cal Poly Pomona	MAT 1200	Statistics with Applications
	Cal Poly San Luis Obispo	MATH 221	Calculus for Bus and Econ
	CSU Bakersfield	- - - - - - - - - - - - - - - - - - - -	No Equivalent Course
	CSU Channel Islands	MATH 140	MATH 140, Calculus for Business Applications
	CSU Chico	MATH 109	Survey of Calculus
	CSU Dominguez Hills	MAT 171	Survey of Calculus for Management and Life Sciences
	CSU East Bay	MATH 1810	Mathematics for Business and Social Sciences
	CSU Fresno	MATH 70	Calculus for Life Sciences
	CSU Fullerton	MATH 135	Business Calculus
	CSU Long Beach	MATH 115	Calculus for Business
	CSU Los Angeles	**Need To Request**	Need to request 11/2020 [MATH 2040, Applied Calculus] And [MATH 2045, Calculus for the Life Sciences]
	CSU Monterey Bay	- - - - - - - - - - - - - - - - - - - -	No Equivalent Course
	CSU Northridge	MATH 103	Mathematical Methods for Business
	CSU Sacramento	MATH 24	Modern Business Math
	CSU San Bernardino	MATH 192	Methods of Calculus
	CSU San Marcos	MATH 132	Survey of Calculus
	CSU Stanislaus	- - - - - - - - - - - - - - - - - - - -	No Equivalent Course
	Humboldt State	MATH 105	Calculus - Biological Science & Natural Resources
	San Diego State	MATH 120 or MATH 121	Calculus for Business Analysis or Calculus for Life Science I
	San Francisco State	MATH 110	Business Calculus
	San Jose State	MATH 71	Calculus for Business/Aviation
OR MATH 181	Sonoma State	MATH 161	Differential & Integral Calculus I (4)
	UC Transferable	Yes	
	UC Berkeley	- - - - - - - - - - - - - - - - - - - -	No Equivalent Course
	UC Davis	MATH 16A or MATH 16B	Short Calculus or Short Calculus
	UC Irvine	- - - - - - - - - - - - - - - - - - - -	No Equivalent Course
	UC Los Angeles	- - - - - - - - - - - - - - - - - - - -	No Equivalent Course
	UC Merced	- - - - - - - - - - - - - - - - - - - -	No Equivalent Course

+ MATH 141	UC Riverside	MATH 22	Calculus for Business
	UC San Diego	- -	No Equivalent Course
	UC Santa Barbara	MATH 34A and MATH 34B	Calculus for Social and Life Science
+ MATH 181 + MATH 181 + MATH 181	UC Santa Cruz	ECON 11A or ECON 11B or MATH 11A	Mathematical Methods for Economists or Mathematical Methods for Economists or Calculus w/ Applications
	C-ID	C-ID MATH 140	Business Calculus
	CSU GE	B4	
	IGETC	2	

MATH 141 Pre-calculus (6) **11/17/20**

CATALOG DESCRIPTION

Preparation for calculus: the study of polynomial, absolute value, radical, rational, exponential, and logarithmic functions, analytic geometry, and polar coordinates. The study of trigonometric functions, their inverses and their graphs, identities and proofs related to trigonometric expressions, trigonometric equations, solving right triangles, solving triangles using the Law of Cosines and the Law of Sines, and introduction to vectors. This is an accelerated one semester alternative to the two semesters of trigonometry (Math 121) and College Algebra (Math 131).

AHC Special Notes	Articulation Institution	Prefix	Title
	Cal Poly Pomona	- - - - - - - - - - - - - - - - - - - -	*Articulation Needed* [MAT 1070, Precalculus (5)]
 Or MATH 131 Or MATH 121	Cal Poly San Luis Obispo	MATH 116 & 117 MATH 118 MATH 118 & 119 MATH 119	Pre-calculus Algebra I & II (3) Pre-Calculus Algebra (4) Pre-Calculus Algebra and Trigonometry (4) Pre-Calculus Trigonometry (4)
	CSU Bakersfield	MATH 1040	Pre-calculus I and II
	CSU Channel Islands	MATH 105	Pre-calculus
	CSU Chico	MATH 119	Pre-calculus Mathematics
	CSU Dominguez Hills	MAT 153	Precalculus
Or MATH 121 or MATH 131	CSU East Bay	MATH 1130 Or MATH 1300	College Algebra Or Trigonometry and Analytic Geometry
	CSU Fresno	MATH 5 Or MATH 6	Trigonometry Or Pre-calculus
	CSU Fullerton	MATH 125	Pre-calculus
	CSU Long Beach	MATH 113	Pre-calculus Algebra
	CSU Los Angeles	MATH 1040	Pre-calculus Functions and Trigonometry
	CSU Monterey Bay	MATH 130	Pre-calculus
	CSU Northridge	MATH 105	Pre-calculus
	CSU Sacramento	MATH 29	Pre-calculus Math
+ MATH 121 or 131	CSU San Bernardino	MATH 120	Pre-Calculus Mathematics
	CSU San Marcos	MATH 125	Pre-Calculus
	CSU Stanislaus	**Request**	**MATH 1100, Precalculus**
	Humboldt State	MATH 102	Algebra and Elementary Functions
+ MATH 121 or 131	San Diego State	MATH 141	Pre-calculus
	San Francisco State	MATH 199	Pre-Calculus
	San Jose State	MATH 19	Pre-calculus
	Sonoma State	MATH 160	Precalculus Mathematics
	UC Transferable	Yes	
	UC Berkeley	- - - - - - - - - - - - - - - - - - - -	No equivalent course
	UC Davis	MATH 12	Pre-calculus
	UC Irvine	- - - - - - - - - - - - - - - - - - - -	Articulation of Major Preparation Courses Only [MATH 1B, Precalculus]

	UC Los Angeles	- - - - - - - - - - - - - - - - - - - -	No equivalent course
	UC Merced	- - - - - - - - - - - - - - - - - - - -	No equivalent course
	UC Riverside	MATH 5	Introduction to College Mathematics
	UC San Diego	- - - - - - - - - - - - - - - - - - - -	Articulation of Major Preparation Courses Only [MATH 3C, Precalculus]
	UC Santa Barbara	- - - - - - - - - - - - - - - - - - - -	No equivalent course
	UC Santa Cruz	MATH 3	Pre-calculus
	C-ID	C-ID MATH 955	Precalculus & Trigonometry
	CSU GE	B4	
	IGETC	2	

CATALOG DESCRIPTION

The first in a two-semester sequence comprising first year calculus. Topics include functions, limits, continuity, the derivative, differentiation of algebraic, trigonometric and transcendental functions, applications of differentiation, the definite integral, and the use of technology to solve calculus problems.

AHC Special Notes	Articulation Institution	Prefix	Title
  + MATH 182	Cal Poly Pomona	MAT 1140 & or MAT 1340	Calculus I or Technical Calculus
     + MATH 182 + MATH 182 + MATH 182 + MATH 182 and MATH 183	Cal Poly San Luis Obispo	MATH 141 Or MATH 161 Or MATH 161 And MATH 162 or MATH 141 And MATH 142 Or MATH 141 And MATH 142 And MATH 143 Or MATH 141 And MATH 142 And MATH 143 And MATH 241	Calculus I Or Calculus for Life Sciences I Or Calculus for Life Sciences I And Calculus for Life Sciences II Or Calculus I And Calculus II Or Calculus I And Calculus II Or Calculus III Or Calculus I Or Calculus II And Calculus III And Calculus IV
	CSU Bakersfield	MATH 2010 Or MATH 2510	Calculus for the Biological and Chemical Sciences Or Calculus I
	CSU Channel Islands	MATH 150	Calculus I
	CSU Chico	MATH 120	Analytic Geometry and Calculus
	CSU Dominguez Hills	MATH 191	Calculus I

 + MATH 182 + MATH 182 & 183 + MATH 182 & 183	CSU East Bay	MATH 1304 Or MATH 1304 & 1305 Or MATH 1304 & 1305 & 2304 Or MATH 1304 & 1305, 2304 & 2305	Calculus I Or Calculus I & II Or Calculus I & II & III Or Calculus I & II, III & IV
	CSU Fresno	MATH 75	Calculus I
	CSU Fullerton	MATH 150A	Calculus I
	CSU Long Beach	MATH 122	Calculus I
  + MATH 182	CSU Los Angeles	MATH 2110 Or MATH 2550	Calculus I Or Introduction to Linear Equations
	CSU Monterey Bay	MATH 150	Calculus I
	CSU Northridge	MATH 150A Or MATH 255A	Mathematical Analysis I Or Calculus for the Life Sciences I
	CSU Sacramento	MATH 26A or MATH 30	Calculus I Social+Life Science or Calculus I
  + MATH 182 + MATH 182	CSU San Bernardino	Math 211 or MATH 211 & 212 Or MATH 211 & 212 & 213	Basic Concepts of Calculus I or Basic Concepts of Calculus I & II Or Basic Concepts of Calculus I & II & III
	CSU San Marcos	MATH 160	Calculus with Applications
+ MATH 182	CSU Stanislaus	MATH 1410 And MATH 1412	Calculus I And Calculus II
	Humboldt State	MATH 105 Or MATH 109	Calculus for Biological Science and Natural Resources Or Calculus I
	San Diego State	MATH 150	Calculus I
	San Francisco State	MATH 226	Calculus I
	San Jose State	MATH 30	Calculus I
	Sonoma State	MATH 161	Differential & Integral Calculus I
	UC Transferable	Yes	
	UC Berkeley	MATH 1A Or MATH 16A	Calculus 1 Or Analytic Geometry and Calculus

	UC Davis	MATH 21A or MATH 16A	Calculus or Short Calculus
	UC Irvine	MATH 2A	Single-Variable Calculus
	UC Los Angeles	MATH 31A	Calculus and Analytic Geometry
	UC Merced	MATH 21	Calculus I for Physical Sciences & Engineering
  + MATH 182 +MATH 182	UC Riverside	MATH 9A or MATH 9A&B&C or MATH 9B	First-Year Calculus or First-Year Calculus or First-Year Calculus
	UC San Diego	MATH 10A or MATH 20A	Calculus or Calculus for Science and Engineering
	UC Santa Barbara	MATH 3A	Calculus with Applications First Course
     + MATH 182	UC Santa Cruz	MATH 11A Or MATH 19A Or MATH 19B	Calculus with Applications Or Calculus for Science, Engineering, and Mathematics (5) Or Calculus for Science, Engineering, and Mathematics (5)
	C-ID	C-ID MATH 210 and C-ID MATH 900S	Single Variable Calculus I Early Transcendentals and Single Variable Calculus Sequence
	CSU GE	B4	
	IGETC	2	

MATH 182 Calculus 2 (4) **11/17/20**

CATALOG DESCRIPTION

The second in a two-semester sequence comprising first year calculus. Topics include methods and applications of integration, sequences and series, Taylor series, an introduction to differential equations, and the use of technology to solve calculus problems.

AHC Special Notes	Articulation Institution	Prefix	Title
  + MATH 181	Cal Poly Pomona	MAT 1150 or MAT 1300	Calculus II or Technical Calculus
        +MATH 181 +MATH 181 & MATH 183 +MATH 181 +MATH 181	Cal Poly San Luis Obispo	MATH 142 Or MATH 143 Or MATH 162 Or MATH 182 Or MATH 141 And MATH 142 Or MATH 141 And MATH 142 And MATH 143 And MATH 241 Or MATH 141 And MATH 142 And MATH 143 Or MATH 161 And MATH 162	Calculus II Or Calculus III Or Calculus for Life Sciences II Or Calculus for Arch. & Construction Management Or Calculus I And Calculus II Or Calculus I And Calculus II And Calculus III And Calculus IV Or Calculus I And Calculus II And Calculus III Or Calculus for Life Sciences I And Calculus for Life Sciences II
	CSU Bakersfield	MATH 2120 Or MATH 2520	Calculus for the Biological and Chemical Sciences II Or Calculus II
	CSU Channel Islands	MATH 151	Calculus II

	CSU Chico	MATH 121	Analytic Geometry and Calculus
	CSU Dominguez Hills	MATH 193	Calculus II
+ MATH 181 + MATH 181 & 183 + MATH 181, 183 & 184	CSU East Bay	MATH 1304 & 1305 Or MATH 1304, 1305 & 2304 Or MATH 1304, 1305, 2304 & 2305	Calculus I & II Or Calculus I & II & III Or Calculus I & II & III & IV
	CSU Fresno	MATH 76	Calculus II
	CSU Fullerton	MATH 150B	Calculus II
	CSU Long Beach	MATH 123 Or ENGR 203 And ENGR 203L	Calculus II Or Engineering Problems and Analysis And Engineering Problems and Analysis Lab
  _ MATH 181	CSU Los Angeles	Math 2120 Or MATH 2550	Calculus II Or Introduction to Linear Algebra
	CSU Monterey Bay	MATH 151	Calculus II
	CSU Northridge	MATH 150B Or MATH 255B	Mathematical Analysis II Or Calculus for the Life Sciences II
	CSU Sacramento	MATH 31	Calculus II
  + MATH 181	CSU San Bernardino	MATH 212 or MATH 213 MATH 211 & MATH 212	Basic Concepts of Calculus II or Basic Concepts of Calculus III Basic Concepts of Calculus Basic Concepts of Calculus II
	CSU San Marcos	MATH 162 Or MATH 260	Calculus with Applications, II Or Calculus with Applications, III
+ MATH 181	CSU Stanislaus	MATH 1410 And MATH 1412	Calculus I And Calculus II
	Humboldt State	MATH 110	Calculus II
	San Diego State	MATH 151	Calculus II
	San Francisco State	MATH 227	Calculus II
	San Jose State	MATH 31	Calculus II
	Sonoma State	MATH 211	Calculus II
	UC Transferable	Yes	
	UC Berkeley	MATH 1B And -	Calculus And **Articulation Denied 3/12/07** [MATH 16B, Analytic Geometry & Calculus]
	UC Davis	MATH 21B	Calculus

Or MATH 181		or MATH 16C	or Short Calculus
	UC Irvine	MATH 2B	Single-Variable Calculus
	UC Los Angeles	MATH 31B	Calculus and Analytic Geometry
+ MATH 181	UC Merced	Math 22	Calculus II for Physical Sciences & Engineering
 + MATH 181	UC Riverside	MATH 9C MATH 9ABC	First-Year Calculus First-Year Calculus
	UC San Diego	MATH 10B or MATH 20B	Calculus or Calculus for Science and Engineering
	UC Santa Barbara	MATH 3B	Calculus with Applications Second Course
  + MATH 181	UC Santa Cruz	MATH 11B Or MATH 19B	Calculus w/ Applications Or Calculus for Science, Engineering, and Mathematics (5)
	C-ID	C-ID MATH 220 and C-ID MATH 900 S	Single Variable Calculus II Early Transcendentals and Single Variable Calculus Sequence
	CSU GE	B4	
	IGETC	2	

CATALOG DESCRIPTION

Functions of several variables; differentiation and integration in several dimensions; change of variables; parameterized curves and vector fields; line and surface integrals; Green's, Stokes', and divergence theorems.

AHC Special Notes	Articulation Institution	Prefix	Title
	Cal Poly Pomona	MAT 2140	Calculus III
+ MATH 181 & 182	Cal Poly San Luis Obispo	MATH 241 Or MATH 141 And MATH 142 And MATH 143 And MATH 241	Calculus IV Or Calculus I And Calculus II And Calculus III And Calculus IV
	CSU Bakersfield	MATH 2533	Multivariable and Vector Calculus
	CSU Channel Islands	MATH 250	Calculus III
	CSU Chico	MATH 220	Analytic Geometry and Calculus
	CSU Dominguez Hills	MATH 211	Calculus III
+ MATH 181 & MATH 182	CSU East Bay	MATH 1304/ 1305/2304	Calculus I & II & III
	CSU Fresno	MATH 77	Calculus III
	CSU Fullerton	MATH 250A	Calculus III
	CSU Long Beach	MATH 224	Calculus III
	CSU Los Angeles	MATH 2130	Calculus III
	CSU Monterey Bay	MATH 250	Multivariate Calculus
	CSU Northridge	MATH 250	Mathematical Analysis III
	CSU Sacramento	MATH 32	Calculus III
	CSU San Bernardino	MATH 251 Or MATH 251 & 252 Or MATH 252	Multivariable Calculus I Or Multivariable Calculus I & II Or Multivariable Calculus II
	CSU San Marcos	- - - - - - - - - - - - - - -	??? Should be MATH 260, Calculus with Applications, III
	CSU Stanislaus	MATH 2410	Multivariate Calculus (4)
+ MATH 184	Humboldt State	MATH 210	Calculus III
	San Diego State	MATH 252	Calculus III
	San Francisco State	MATH 228	Calculus III
	San Jose State	MATH 32	Calculus III
	Sonoma State	MATH 261	Multivariable Calculus
	UC Transferable	Yes	
	UC Berkeley	MATH 53	Multivariable Calculus

+ MATH 184 or + MATH 184	UC Davis	MATH 21C or MATH 21D or MATH 22A or MATH 22B	Calculus or Vector Analysis or Linear Algebra or Differential Equations
	UC Irvine	MATH 2D Or MATH 2E	Multivariable Calculus Or Multivariable Calculus
	UC Los Angeles	MATH 32 A and MATH 32B	Calculus of Several Variables And Calculus of Several Variables
	UC Merced	MATH 21	Multi-Variable Calculus
+ MATH 184	UC Riverside	MATH 10A & MATH 10B or MATH 31	Calculus of Several Variables or Applied Liner Algebra
	UC San Diego	MATH 10C or MATH 20C	Calculus or Calculus and Analytic Geometry for Sciences and Engineering
	UC Santa Barbara	MATH 6A or MATH 6B	Vector Calculus with Applications First Course or Vector Calculus with Applications Second Course
	UC Santa Cruz	MATH 22 or MATH 23A	Introduction to Calculus of Several Variables or Multivariable Calculus
	C-ID	C-ID MATH 230	Multivariable Calculus
	CSU GE	B4	
	IGETC	2	

CATALOG DESCRIPTION

First order ordinary differential equations, including separable, linear, homogeneous of degree zero, Bernoulli and exact with applications and numerical methods. Solutions to higher order differential equations using undetermined coefficients, variation of parameters, and power series, with applications. Solutions to linear and non-linear systems of differential equations, including numerical solutions. Matrix algebra, solutions of linear systems of equations, and determinants. Vector spaces, linear independence, basis and dimension, subspace and inner product space, including the Gram-Schmidt procedure. Linear transformations, kernel and range, eigenvalues, eigenvectors, diagonalization and symmetric matrices.

AHC Special: Notes	Articulation Institution	Prefix	Title
	Cal Poly Pomona	MAT 2240 Or MAT 2250	Elementary Linear Algebra and Differential Equations Or Linear Algebra with Applications to Differential Equations
	Cal Poly San Luis Obispo	MATH 206 Or MATH 206 And MATH 242 Or MATH 242 Or MATH 244	Linear Algebra I Or Linear Algebra I And Differential Equations Or Differential Equations Or Linear Analysis I
	CSU Bakersfield	MATH 2540 And MATH 2610	Ordinary Differential Equations And Linear Algebra I
	CSU Channel Islands	- - - - - - - - - - - - - - - - - - - -	No equivalent course [MATH 240 Linear Algebra?]
	CSU Chico	MATH 260	Elementary Differential Equations
	CSU Dominguez Hills	- - - - - - - - - - - - - - - - - - - -	**Upper Division Equivalent Courses** [MAT 311, Differential Equations & MAT 331, Linear Algebra]
	CSU East Bay	MATH 2101	Elements of Linear Algebra
	CSU Fresno	MATH 81	Elementary Differential Equations with Linear Algebra
	CSU Fullerton	MATH 250B	Introductions to Linear Algebra and Differential Equations
	CSU Long Beach	MATH 247	Introduction to Linear Algebra
	CSU Los Angeles	MATH 2150	Differential Equations
	CSU Monterey Bay	MATH 265	Differential Equations and Linear Algebra
	CSU Northridge	MATH 280	Applied Differential Equations
	CSU Sacramento	MATH 45	Differential Equations for Science and Engineering

	CSU San Bernardino	MATH 270	Elementary Differential Equations
	CSU San Marcos	MATH 262 or MATH 264	Introduction to Differential Equations or Introduction to Linear Algebra
	CSU Stanislaus	**Request Again/Pending**	**Articulation Requested 7/30/07 & 10/13/07** [MATH 2460, Introductions to Differential Equations (2), and MATH 2530, Linear Algebra (3)]
+ MATH 183	Humboldt State	**Request**	**MATH 241, Elements of Linear Algebra**
	San Diego State	MATH 254	Introduction to Linear Algebra
	San Francisco State	MATH 245	Elementary Differential Equations and Linear Algebra
	San Jose State	MATH 33A or MATH 33LA or MATH 39	Ordinary Differential Equations or Differential Equations and Linear Algebra or Linear Algebra I
	Sonoma State	MATH 241	Linear Algebra with Applications in Differential Equations
	UC Transferable	Yes	
	UC Berkeley	MATH 54	Linear Algebra and Differential Equations
+ MATH 183 or + MATH 183	UC Davis	MATH 22A or MATH 22B	Linear Algebra or Differential Equations
	UC Irvine	MATH 3A Or MATH 3D	Introduction to Linear Algebra Or Elementary Differential Equations
	UC Los Angeles	MATH 33A Or MATH 33B	Linear Algebra & Applications Or Differential Equations
	UC Merced	MATH 24	Linear Algebra and Differential Equations
+ MATH 184	UC Riverside	MATH 31 or MATH 46	Applied Linear Algebra or Intro to Ordinary Differential Equations
	UC San Diego	MATH 18 or MATH 20D	Linear Algebra or Intro to Differential Equations
	UC Santa Barbara	MATH 4A or MATH 4B	Linear Algebra with Applications or Differential Equations
	UC Santa Cruz	MATH 21 or MATH 24	Linear Algebra or Ordinary Differential Equations
	C-ID	C-ID MATH 910S	Linear Algebra and Differential Equations

	CSU GE	B4	
	IGETC	2	

COURSE REVIEW VERIFICATION SHEET

COURSE REVIEW VERIFICATION

Discipline: Mathematics **Year:** 2020/2021

As part of the program evaluation process, the self-study team has reviewed the course outlines supporting the discipline/program curriculum. The review process has resulted in the following recommendations:

1. The following course outlines are satisfactory as written and do not require modification (list all such courses):
   Math 521, Math 311, Math 331, Math 321, Math 121, Math 131, Math 141, Math 181, Math 182, Math 183, Math 184, Math 135, Math 100, Math 123, Math 105.

2. The following courses require minor modification to ensure currency. The self study team anticipates submitting such modifications to the AP&P, FALL 20_____ SPRING 20____ :
   N/A

3. The following courses require major modification. The self study team anticipates submitting such modifications to the AP&P committee, FALL 2021 SPRING 20_____:
   Math 309

GRADUATION REQUIREMENTS: General Education (GE), Multicultural/Gender Studies (MCGS) and Health & Safety (H&W) Courses.

The following courses were reviewed as meeting an **AHC GE** requirement. The AP&P GE Criteria and Category Definitions (GE Learning Outcomes) forms were submitted to the AP&P for review on: October 2020
Math 100, Math 105, Math 123, Math 135, Math 181, Math 321

The following courses were reviewed as meeting the **MCGS** requirement. The AP&P MCGS Criteria and Category Definitions (MCGS Learning Outcomes – To Be Developed) forms were submitted to the AP&P for review on: ______

N/A

The following courses were reviewed as meeting the **H&W** requirement. The AP&P H&W Studies Criteria (To Be Developed) and Category Definitions (H&W Learning Outcomes – To Be Developed) forms were submitted to the AP&P chair for review on: ____________

N/A

Course Review Team Members:

Eui Young Chung Nov. 24, 2020
Signature Date

11/24/2020
Signature Date

11/24/2020
Signature Date

Signature Date

Signature AP&P Chair Date

APPENDICES

Approved Course Outline

Degree and Certificate Requirements

APPROVED

COURSE OUTLINES

Board Approval: 05/16/2000
PCA Established: 12/08/2015
DL Conversion:
Date Reviewed: Spring 2018
Catalog Year: 2018 - 2019

Allan Hancock College
Course Outline

Discipline Placement: Mathematics (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 100

Catalog Course Title: Nature of Modern Mathematics

Banner Course Title: Nature of Modern Mathematics

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	3.000	48.0 - 54.0	
Lab	0.000	0.0 - 0.0	
Outside-of-Class Hours	6.000	96.0 - 108.0	
Total Student Learning Hours	9.0	144.0 - 162.0	3.0
Total Contact Hours	3.0	48.0 - 54.0	

Number of Times Course may be Repeated
0

Grading Method
Letter Grade or Pass/No Pass

Requisites

Prerequisite
MATH 309 Algebra and Math Literacy
or

Prerequisite
MATH 331 Algebra 2
or

Prerequisite
prior completion of MATH 333 and MATH 334

Entrance Skills

Upon entering this course, the student should be able to:

MATH 309 - Algebra and Math Literacy

- create and use linear models.
- create and use exponential models.
- analyze a quadratic models.
- use basic function vocabulary.
- determine and analyze average rate of change.
- determine and analyze the percent rate of change.
- create, label, read and interpret graphs.
- interpret the graph of two or more linear equations.
- interpret the intercepts of a graph.
- use Excel to write formulas or create algorithms in order to solve problems.
- calculate and use percentage efficiently.
- use ratios and proportions to solve problems.
- calculate and interpret basic probabilities.
- calculate and interpret mean, median, mode and weighted means.
- convert between measurements.
- calculate the perimeter, area and volume of various geometric shapes.
- demonstrate a familiarly with various angles and degrees.
- use the Pythagorean theorem to solve various problems.
- demonstrate an understanding of various algebra topics.

MATH 331 - Algebra 2

Entrance Skills Other (Legacy)

9. solve quadratic, rational, radical, and exponential equations.

10. solve word problems at the intermediate algebra level.

Catalog Description

A study of contemporary topics in mathematics including statistics, social choice, management science, and geometric and algebraic patterns.

Course Content

Lecture

1. Statistics, Combinatorics, and Probability
2. Instructor will select at least two of the following areas of study
   a. Social Choice
   b. Management Science
   c. Geometric and Algebraic Patterns

Course Objectives

At the end of the course, the student will be able to:

1. count simple sets using combinatorics and calculate probabilities of events.
2. analyze a set of data, constructing a frequency distribution and computing statistical measures.
3. read, understand, and evaluate simple statistical studies.
4. cite examples from society where math has played a crucial rule.
5. solve a variety of problems taken from at least two of the following areas of study: social choice, management science, and geometric and algebraic patterns.

Social Choice:

A) divide a set of goods into a given number of fair shares.

B) identify methods of voting and apportionment and determine the effect a change of method has on the outcome.

Management Science:

A) define simple terms from graph theory and state some of the classic results.

B) apply graph theory to the tasks of scheduling and routing problems.

Geometric and Algebraic Patterns:

A) describe patterns of growth in nature and make predictions by finding/using algebraic models.

B) describe/identify/recognize recursive patterns and form of symmetry in geometric figures.

Methods of Instruction

- **Discussion**
- **Lecture**

Assignments

- **Outside Assignments**
  Reading the textbook and working assigned homework problems based on the Course Objectives, to average 6 hours per week.

Methods of Evaluation

1. Graded homework assignments (may include projects and papers)
2. Exams/Quizzes

Texts and Other Instructional Materials

Adopted Textbook

1. Tanenbaum, Peter and Robert Arnold *Excursions in Modern Mathematics* Edition: 8 2014

Supplemental Texts

1. Davis. P. and R. Hersh. The Mathematical Experience. Birkhauser. 1981.

2. Jacobs, Harold. Mathematics: A Human Endeavor. Freeman. 1982.
3. Paulos, John Allen. Beyond Numeracy: Ruminations of a Numbers Man. Alfred A. Knopf. 1991.
4. Poundstone, William. Gaming the Vote: Why Elections Aren't Fair (and What We Can Do About It. Hill and Wang. 2008.
5. Brams, Steven, and Alan Taylor. The Win-Win Solution: Guaranteeing Fair Shares to Everybody. W.W. Norton. 1999.
6. Utts, Jessica M. Seeing Through Statistics. Wadsworth, Inc. 1996.

Instructional Materials
None

Student Learning Outcomes

1. MATH100 SLO1 - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
2. MATH100 SLO2 - Represent mathematical information symbolically, graphically, numerically, and in writing.
3. MATH100 SLO3 - Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
4. MATH100 SLO4 - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
5. MATH100 SLO5 - Check mathematical results for reasonableness.
6. MATH100 SLO6 - Use appropriate technologies to analyze and solve mathematical problems.

Distance Learning

This course is not Distance Learning.

Board Approval: 11/13/2018
PCA Established: 11/06/2014
DL Conversion: 12/18/2007
Date Reviewed: Fall 2018
Catalog Year: 2019 - 2020

Allan Hancock College Course Outline

Discipline Placement: Mathematics (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 105

Catalog Course Title: Mathematics for Teachers

Banner Course Title: Mathematics for Teachers

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	5.000	80.0 - 90.0	
Lab	0.000	0.0 - 0.0	
Outside-of-Class Hours	8.000	128.0 - 144.0	
Total Student Learning Hours	13.0	208.0 - 234.0	4.0
Total Contact Hours	5.0	80.0 - 90.0	

Number of Times Course may be Repeated
0

Grading Method
Letter Grade Only

Requisites

Prerequisite
MATH 331 Algebra 2
or

Prerequisite
prior completion of Math 334 Algebra 2: Part 2

Entrance Skills

Upon entering this course, the student should be able to:

MATH 331 - Algebra 2

Entrance Skills Other (Legacy)

Skills for Math 334 (and its prerequisite, Math 333) are the same as for Math 331.

Catalog Description

A study of basic concepts of mathematics required for the liberal studies major and the multiple subject teaching credential. It is recommended for current elementary and junior high school teachers. It is also recommended for the career technical single subject education credential candidate. Topics include development of critical thinking, set theory, logic, numeration systems, the set of integers, elementary number theory, the set of rational numbers, the set of real numbers, and measurement of geometric figures.

Course Content

Lecture

1. Mathematical Reasoning
    a. Problem solving strategies: diverse approaches as related to learning styles and cultural diversity
    b. Mathematical representations: oral, written, visual, symbolic, numerical, technological
2. Finding, describing, and analyzing patterns
    a. Inductive reasoning
    b. Deductive reasoning
    c. Generating new patterns
3. Sets
    a. Sets, subsets, attributes, and categorization
    b. Notation and representations
    c. Operations and cardinality
4. Numbers
    a. Whole numbers and counting
    b. Integers, number theory, and contemporary applications in coding systems
    c. Rational numbers, percents, ratio, and proportion; Egyptian fractions
    d. Irrational numbers, decimals, and real numbers
    e. Operations, algorithms, and their history and origins, including multiplication techniques developed in Egypt, India, China, and elsewhere
    f. Mental estimation, use of calculators, use of manipulatives
    g. Base ten place value, bases other than ten, their history and usage. May include: Egyptian base two multiplication and division, Babylonian base sixty and its remnants in systems of timekeeping, Chinese/Hindu/Islamic/Mayan inventions of place value, African base five systems

5. Patterns and modular arithmetic
    a. Use of modular arithmetic for the investigation of visual and geometric patterns
    b. Addition, subtraction, multiplication, and some division in modular arithmetic
    c. Connections to Chinese calendar calculations, Islamic art, and contemporary art and science
6. Measurement
    a. Length and perimeter
    b. Area and surface area
    c. Volume
    d. Systems of measurement: foot-pound, metric, and their origins in various cultures
    e. The Pythagorean Theorem and earlier versions in China and Babylonia
    f. Area and volumes of similar shapes
7. Algebra and coordinate geometry
    a. Origins in Egyptian, Babylonian, Islamic, Chinese, Greek, and Indian mathematics
    b. Relations and functions
    c. Graphs of linear and quadratic functions
    d. Verbal, algebraic, tabular, and graphical representations
    e. Coordinate geometry
8. Mathematical resources and trends in math education
    a. Standards of the National Council of Teachers of Mathematics, and related standards and organizations
    b. Resources for mathematics and mathematics teaching, including essays, interviews, web sites, and the news media

---

Course Objectives

At the end of the course, the student will be able to:

1. develop and reinforce conceptual understanding of mathematical topics through the use of patterns, problem solving, communication, connections, modeling, reasoning, and representation;

2. use properties of numbers to explain numerical and visual patterns;
3. apply properties of sets to perform operations on sets.
4. perform calculations with place value system and different bases;
5. evaluate the equivalence of numeric algorithms and explain the advantage and disadvantage of equivalent algorithms in different circumstances;
6. identify the mathematical contributions and use the numeration systems and calculation methods of a variety of civilizations such as Chinese, Hindu, Islamic, Egyptian, Babylonian, Roman, European, African, and Mayan.
7. understand structure and basic properties of integers and apply computational algorithms;
8. apply algorithm from number theory to solve problems involving divisibility, prime and composite numbers, prime factorization, fundamental theorem of arithmetic, least common multiple and greatest common divisor and their role in standard algorithm;
9. explain the concept of rational numbers; using both ratio and decimal representations; analyze the arithmetic algorithms for these two representations; and justify their equivalence.
10. analyze the structure and properties of whole, rational, and real number system; define the concept of rational and irrational number, including their decimal representation; illustrate the use of number line representation;
11. measure and compute the lengths, areas, and volumes of mathematical shapes and real objects.
12. use algebra and coordinate geometry to represent and solve problems.
13. utilize a variety of mathematical resources including reference books, histories, essays, the internet and the world wide web, news articles, and interviews to analyze contemporary trends in mathematics and math education.
14. develop activities implementing national and state curriculum standards for elementary school math.

Methods of Instruction

- **Lecture**

Assignments

- **Other Assignments**
  Assigned reading in textbook and other sources, assigned homework problems and assigned projects based on the Course Objectives, to average 8 hours per week.

Methods of Evaluation

- **Exams/Tests**
- **Quizzes**
- **Projects**
- **Class Participation**
- **Home Work**
- **Other**
  Tests, examinations, homework or projects where students demonstrate their mastery of the learning objectives and their ability to devise, organize and present complete solutions to problems.

Texts and Other Instructional Materials

Adopted Textbook

1. Billstein *A Problem Solving Approach to Mathematics for Elementary School Teachers* Edition: 12th 2015

Supplemental Texts

1. Scientific calculator
2. http://www.nctm.org: Principles and Standards, Common Core Standards.
3. Supplemental assigned readings.

Instructional Materials
None

Student Learning Outcomes

1. MATH105 SLO1 - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
2. MATH105 SLO2 - Represent mathematical information symbolically, graphically, numerically, and in writing.
3. MATH105 SLO3 - Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
4. MATH105 SLO4 - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
5. MATH105 SLO5 - Check mathematical results for reasonableness.
6. MATH105 SLO6 - Use appropriate technologies to analyze and solve mathematical problems.

Distance Learning

Delivery Methods

- Internet
- Other Method (explain)
- Other
  Hybrid course that is 60% on campus and 40% online. Of the 4 weekly contact hours, 1.6 (40%)will be online.

Instructor Initiated Contact Hours Per Week: 4.000

Contact Types

1. Email Communication (group and/or individual communications)
2. Discussion Board
3. Testing
4. Other (please specify)
   in class lectures

Adjustments to Assignments
n/a since the class is 60% face to face.

Adjustments to Evaluation Tools
n/a since the class is 60% face to face.

Strategies to Make Course Accessible to Disabled Students
met with adaptive tech specialist, course is accessible to students with disabilities

Inform Students
Syllabus, learning management system (Canvas), email, regular class meetings, office hours.

Additional Comments
N/A

Board Approval: 04/17/1984
PCA Established: 11/13/2018
DL Conversion:
Date Reviewed: Fall 2018
Catalog Year: 2019 - 2020

Allan Hancock College
Course Outline

Discipline Placement: Mathematics (Masters Required) or Engineering (Masters Required) or Physics/Astronomy (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 121

Catalog Course Title: Trigonometry

Banner Course Title: Trigonometry

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	3.000	48.0 - 54.0	
Lab	0.000	0.0 - 0.0	
Outside-of-Class Hours	6.000	96.0 - 108.0	
Total Student Learning Hours	9.0	144.0 - 162.0	3.0
Total Contact Hours	3.0	48.0 - 54.0	

Number of Times Course may be Repeated
0

Grading Method
Letter Grade Only

Requisites

Prerequisite
MATH 331 Algebra 2
or successful completion of MATH 334

Entrance Skills

Upon entering this course, the student should be able to:

MATH 331 - Algebra 2

Entrance Skills Other (Legacy)
Math 334 (with its prerequisite of math 333) provides the same entrance skills as Math 331.

Catalog Description

The study of directed angles, degree/radian measures of angles, trigonometric functions of angles and of numbers, solutions of right and oblique triangles, identities, functions of composite angles, graphs, equations, inverse functions, vectors and complex numbers.

Course Content

Lecture

1. Rectangular coordinates, angles and circular/radian measure
2. Definitions of the six trigonometric functions according to the right triangle, the unit circle and the rectangular coordinate system
3. Applications of the right triangle
4. Simplification of trigonometric expressions
5. Proofs of trigonometric identities
6. Graphs of trigonometric functions: period, amplitude, phase shift, asymptotes
7. Inverse trigonometric functions and their graphs
8. Trigonometric equations
9. Solving triangles: Law of Sines and Law of Cosines
10. Polar coordinates and equations
11. DeMoivre's Theorem and applications
12. Introduction to vectors

Course Objectives

At the end of the course, the student will be able to:

1. identify special triangles and their related angle and side measures
2. evaluate the trigonometric function of an angle in degree and radian measure
3. manipulate and simplify a trigonometric expression
4. solve trigonometric equations, triangles and applications
5. graph the basic trigonometric functions and apply changes in period, phase and amplitude to generate new graphs
6. evaluate and graph inverse trigonometric functions
7. prove trigonometric identities
8. convert between polar and rectangular coordinates and equations
9. graph polar equations
10. calculate powers and roots of complex numbers using DeMoivre's Theorem
11. represent a vector (a quantity with magnitude and direction) in the form and ai+bj

---

Methods of Instruction

- **Discussion**
- **Individualized Instruction**
- **Lecture**

Assignments

- **Outside Assignments**
  Reading the textbook and working assigned homework problems based on the Course Objectives, to average 6 hours per week.

Methods of Evaluation

1. Graded homework assignments
2. Quizzes
3. 2 - 4 exams
4. Comprehensive final exam

Texts and Other Instructional Materials

Adopted Textbook

1. Mckeague *Trigonometry* Edition: 8 2016

Supplemental Texts

1. Graphing Calculator

Instructional Materials

None

Student Learning Outcomes

1. MATH121 SLO1 - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
2. MATH121 SLO2 - Represent mathematical information symbolically, graphically, numerically, and in writing.
3. MATH121 SLO3 - Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
4. MATH121 SLO4 - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
5. MATH121 SLO5 - Check mathematical results for reasonableness.
6. MATH121 SLO6 - Use appropriate technologies to analyze and solve mathematical problems.

Distance Learning

This course is not Distance Learning.

Board Approval: 02/20/2001
PCA Established: 03/08/2016
DL Conversion: 05/05/2005
Date Reviewed: Spring 2016
Catalog Year: 2017 - 2018

Allan Hancock College
Course Outline

Discipline Placement: Economics (Masters Required) or Mathematics (Masters Required) or Engineering (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 123

Catalog Course Title: Elementary Statistics

Banner Course Title: Elementary Statistics

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	5.000	80.0 - 90.0	
Lab	0.000	0.0 - 0.0	
Outside-of-Class Hours	8.000	128.0 - 144.0	
Total Student Learning Hours	13.0	208.0 - 234.0	4.0
Total Contact Hours	5.0	80.0 - 90.0	

Number of Times Course may be Repeated
0

Grading Method
Letter Grade Only

Requisites

Prerequisite
MATH 309 Algebra and Math Literacy
or

Prerequisite
MATH 331 Algebra 2
or

Prerequisite
Math 333/334

Entrance Skills

Upon entering this course, the student should be able to:

MATH 309 - Algebra and Math Literacy

- create and use linear models.
- create and use exponential models.
- analyze a quadratic models.
- use basic function vocabulary.
- determine and analyze average rate of change.
- determine and analyze the percent rate of change.
- create, label, read and interpret graphs.
- interpret the graph of two or more linear equations.
- interpret the intercepts of a graph.
- use Excel to write formulas or create algorithms in order to solve problems.
- calculate and use percentage efficiently.
- use ratios and proportions to solve problems.
- calculate and interpret basic probabilities.
- calculate and interpret mean, median, mode and weighted means.
- convert between measurements.
- calculate the perimeter, area and volume of various geometric shapes.
- demonstrate a familiarly with various angles and degrees.
- use the Pythagorean theorem to solve various problems.
- demonstrate an understanding of various algebra topics.

MATH 331 - Algebra 2

Entrance Skills Other (Legacy)

Same as Math 331.

Catalog Description

A study of descriptive and inferential statistics including applications in the behavioral and natural sciences. Topics include classification and analysis of data, probability, distributions, sampling, the binomial, normal, t, F, and chi-square distributions, confidence intervals, hypothesis testing, regression analysis, analysis of variance and non-parametric methods. Calculators and/or computers will be used throughout.

Course Content

Lecture

1. Summarizing data graphically and numerically;
2. Descriptive statistics: measures of central tendency, variation, relative position, and levels/scales of measurement;
3. Sample spaces and probability;
4. Random variables and expected value;

5. Sampling and sampling distributions;

6. Discrete distributions – Binomial;

7. Continuous distributions – Normal;

8. The Central Limit Theorem;

9. Estimation and confidence intervals;

10. Hypothesis Testing and inference, including t-tests for one and two populations, and Chi-square test;

11. Correlation and linear regression and analysis of variance (ANOVA);

12. Applications using data from disciplines including business, social sciences, psychology, life science, health science, and education; and

13. Statistical analysis using technology such as SPSS, EXCEL, Minitab, or graphing calculators.

Course Objectives

At the end of the course, the student will be able to:

1. Distinguish among different scales of measurement and their implications;
2. Interpret data displayed in tables and graphically;
3. Apply concepts of sample space and probability;
4. Calculate measures of central tendency and variation for a given data set;
5. Identify the standard methods of obtaining data and identify advantages and disadvantages of each;
6. Calculate the mean and variance of a discrete distribution;
7. Calculate probabilities using normal and t-distributions;
8. Distinguish the difference between sample and population distributions and analyze the role played by the Central Limit Theorem;
9. Construct and interpret confidence intervals;
10. Determine and interpret levels of statistical significance including p-values;
11. Interpret the output of a technology-based statistical analysis;
12. Identify the basic concept of hypothesis testing including Type I and II errors;
13. Formulate hypothesis tests involving samples from one and two populations;
14. Select the appropriate technique for testing a hypothesis and interpret the result;
15. Use linear regression and ANOVA analysis for estimation and inference, and interpret the associated statistics; and
16. Use appropriate statistical techniques to analyze and interpret applications based on data from disciplines including business, social sciences, psychology, life science, health science, and education.

Methods of Instruction

- **Discussion**
- **Lecture**

Assignments

- **Outside Assignments**
  Reading the textbook and working assigned homework problems based on the Course Objectives, to average 8 hours per week.

Methods of Evaluation

1. Graded homework assignments
2. Tests and/or quizzes

Texts and Other Instructional Materials

Adopted Textbook

1. Larson *Elementary Statistics* Edition: 6 2015

Supplemental Texts

1. Statistical calculator (such as the TI-84)

Instructional Materials
None

Student Learning Outcomes

1. MATH123 SLO1 - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
2. MATH123 SLO2 - Utilize a variety of problem-solving techniques and strategies to identify, analyze and

solve problems.
3. MATH123 SLO3 - Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
4. MATH123 SLO4 - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
5. MATH123 SLO5 - Check mathematical results for reasonableness.
6. MATH123 SLO6 - Use appropriate technologies to analyze and solve mathematical problems.

Distance Learning

Delivery Methods

- Internet

Instructor Initiated Contact Hours Per Week: 4.000

Contact Types

1. Discussion Board
2. Email Communication (group and/or individual communications)
3. Other (please specify)
   On campus office hours, Math Center hours if instructor works in the Math Center.
4. Testing

Adjustments to Assignments
Participation in discussion board on the course Canvas (or other LMS) site is required. HW is online (as is true for about half of our face to face classes) and online quizzes are required.

Adjustments to Evaluation Tools
Online quizzes will be used. Not all face to face sections require quizzes. There will be three on campus exams. Face to face classes often have more exams.

Strategies to Make Course Accessible to Disabled Students
Met with adaptive tech specialist, course is accessible to students with disabilities.

Inform Students
Students will be informed of services via Canvas (or other LMS) announcements, email, the syllabus, office hours and the online orientation.

Additional Comments
N/A.

Board Approval: 12/11/2018
PCA Established: 12/11/2018
DL Conversion:
Date Reviewed: Fall 2018
Catalog Year: 2019 - 2020

Allan Hancock College
Course Outline

Discipline Placement: Mathematics (Masters Required) or Economics (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 123S

Catalog Course Title: Support For Math 123: Elementary Statistics

Banner Course Title: Support For Math 123: Elementary Statistics

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	2.000	32.0 - 36.0	
Lab	0.000	0.0 - 0.0	
Outside-of-Class Hours	1.000	16.0 - 18.0	
Total Student Learning Hours	3.0	48.0 - 54.0	1.0
Total Contact Hours	2.0	32.0 - 36.0	

Number of Times Course may be Repeated
0

Grading Method
Pass/No Pass

Requisites

Corequisite
MATH 123 Elementary Statistics

Entrance Skills

None

Catalog Description

This course is offered as a supplement for students enrolled in Math 123, Elementary Statistics. It is intended for students for whom support has been recommended or required. The course reviews prerequisite topics and strategies to be a more successful math student.

Course Content

Lecture

1. Fraction to decimal to percent conversions; scientific notation
2. Venn diagrams; "and" versus "or" problems
3. Inequalities: intervals, language and notation
4. Computing statistical formulas using order of operations
5. Linear equations in two variables: graph, rate of change
6. Solving linear equations
7. Use of a calculator in statistics
8. Language and symbols of statistics
9. Mathematical perseverance
10. Growth mindset
11. Math anxiety
12. Time management
13. Habits of successful math students:
    a. How to read a math textbook
    b. How to study math
    c. How to take notes in math
    d. How to do math homework
    e. Math tests: preparation, taking the exam, post analysis
    f. Theories of Learning, such as Bloom’s taxonomy
14. Support services

Course Objectives

At the end of the course, the student will be able to:

1. demonstrate competence in the prerequisite skills for Statistics.
2. demonstrate knowledge of the language and symbols of Statistics.
3. demonstrate knowledge of the strategies necessary to be a successful math student.

Methods of Instruction

- **Discussion**
- **Lecture**
- **Methods of Instruction Description:**
  Group activities

Assignments

- **Outside Assignments**
  Students will be expected to perform such activities as: reading the textbook, providing written responses to prompts (videos, handouts, etc.), visiting student service areas or solving additional practice problems, to average one hour per week.

Methods of Evaluation

- **Class Participation**
- **Class Work**
- **Home Work**

Texts and Other Instructional Materials

Adopted Textbook

1. Larson *Elementary Statistics* Edition: 6 2015

Supplemental Texts
None

Instructional Materials

1. TI-83/84 (graphing calculator)

Student Learning Outcomes

1. MATH123S SLO1 - Pass the corequisite course, Math 123.

Distance Learning

This course is not Distance Learning.

Board Approval: 02/20/2001
PCA Established: 11/13/2018
DL Conversion: 02/21/2002
Date Reviewed: Fall 2018
Catalog Year: 2019 - 2020

Allan Hancock College
Course Outline

Discipline Placement: Mathematics (Masters Required) or Engineering (Masters Required) or Physics/Astronomy (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 131

Catalog Course Title: College Algebra

Banner Course Title: College Algebra

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	4.000	64.0 - 72.0	
Lab	0.000	0.0 - 0.0	
Outside-of-Class Hours	6.000	96.0 - 108.0	
Total Student Learning Hours	10.0	160.0 - 180.0	3.0
Total Contact Hours	4.0	64.0 - 72.0	

Number of Times Course may be Repeated
0

Grading Method
Letter Grade Only

Requisites

Prerequisite
MATH 331 Algebra 2
or

Prerequisite
Math 334 - Algebra 2: Part 2

Entrance Skills

Upon entering this course, the student should be able to:

MATH 331 - Algebra 2

Entrance Skills Other (Legacy)

Math 334 (along with its prerequisite Math 333) provides the same entrance skills as Math 331.

Catalog Description

College level course in algebra for majors in science, technology, engineering, and mathematics: polynomial, rational, radical, exponential, absolute value, and logarithmic functions; systems of equations; theory of polynomial equations; analytic geometry.

Course Content

Lecture

1. Functions including linear, polynomial, rational, radical, exponential, absolute value, logarithmic: definitions, evaluation, domain and range;
2. Inverses of functions;
3. Algebra of functions;
4. Graphs of functions including asymptotic behavior, intercepts, vertices;
5. Transformations of quadratic, absolute value, radical, rational, logarithmic, exponential functions;
6. Equations including rational, linear, polynomial, radical, exponential, absolute value, logarithmic;
7. Linear, nonlinear, and absolute value inequalities;
8. Systems of equations and inequalities;
9. Characterization of the zeros of polynomials;
10. Properties and applications of Complex numbers;
11. Properties of conic sections; and
12. Sequences and series.

Course Objectives

At the end of the course, the student will be able to:

1. analyze and investigate properties of functions;
2. synthesize results from the graphs and/or equations of functions;
3. apply transformations to the graphs of functions;
4. recognize the relationship between functions and their inverses graphically and algebraically;
5. solve and apply rational, linear, polynomial, radical, absolute value, exponential, and logarithmic equations and solve linear, nonlinear, and absolute value inequalities;
6. apply techniques for finding zeros of polynomials and roots of equations;
7. apply functions and other algebraic techniques to model real world STEM applications;
8. analyze conics algebraically and graphically; and
9. use formulas to find sums of finite and infinite series.

Methods of Instruction

- **Discussion**
- **Individualized Instruction**
- **Lecture**

Assignments

- **Outside Assignments**
  Reading the textbook and working assigned homework problems based on the Course Objectives, to average 6 hours per week.

Methods of Evaluation

1. Graded homework assignments.
2. Quizzes and tests.
3. Comprehensive final exam.

Texts and Other Instructional Materials

Adopted Textbook

1. Blitzer *College Algebra with My Math Lab* Edition: 6th 2014
2. Stewart *College Algebra* Edition: 7th 2016

Supplemental Texts

1. Graphing Calculator
2. Smith, Richard. Mastering Mathematics: How to be a Great Math Student. 2003.
3. http://en.wikipedia.org/wiki/Portal:Mathematics

Instructional Materials

None

Student Learning Outcomes

1. MATH131 SLO1 **-** Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
2. MATH131 SLO2 **-** Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
3. MATH131 SLO3 **-** Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
4. MATH131 SLO4 **-** Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
5. MATH131 SLO5 **-** Check mathematical results for reasonableness.
6. MATH131 SLO6 **-** Use appropriate technologies to analyze and solve mathematical problems.

Distance Learning

Delivery Methods

- Internet

Instructor Initiated Contact Hours Per Week: 3.000

Contact Types

1. Telephone Contacts

2. Email Communication (group and/or individual communications)
3. Chat room
4. Discussion Board
5. Orientation Sessions
6. Group Meetings
7. Review Session
8. Testing
9. Other (please specify)
   Individual Meetings

Adjustments to Assignments
Depending on the instructor, homework may be online as opposed to written, and DIscussion participation (On Canvas or other LMS) might be required.

Adjustments to Evaluation Tools
None. Exams will still be given on campus.

Strategies to Make Course Accessible to Disabled Students
Screen Reader/Graphs and any other visual item: tactile graphics, audio lecture, lectures on CDs, instructions and tutors will be available for additional assistance.

Inform Students
Online orientation on faculty’s home page. URL available in the schedule book providing information on course and all available online services prior to registration. Services and how-to instruction will be posted as an announcement at the beginning of the semester.

Additional Comments
N/A.

Board Approval: 12/11/2018
PCA Established: 12/11/2018
DL Conversion:
Date Reviewed: Fall 2018
Catalog Year: 2019 - 2020

Allan Hancock College
Course Outline

Discipline Placement: Mathematics (Masters Required) or Engineering (Masters Required) or Physics/Astronomy (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 131S

Catalog Course Title: Support For Math 131: College Algebra

Banner Course Title: Support For Math 131: College Algebra

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	3.000	48.0 - 54.0	
Lab	0.000	0.0 - 0.0	
Outside-of-Class Hours	2.000	32.0 - 36.0	
Total Student Learning Hours	5.0	80.0 - 90.0	1.5
Total Contact Hours	3.0	48.0 - 54.0	

Number of Times Course may be Repeated
0

Grading Method
Pass/No Pass

Requisites

Corequisite
MATH 131 College Algebra

Entrance Skills

None

Catalog Description

This course is offered as a supplement for students enrolled in Math 131; College Algebra. It is intended for students for whom support has been recommended or required. The course reviews prerequisite topics and strategies to be a more successful math student.

Course Content

Lecture

1. Function notation; domain; range
2. Families of functions; intercepts; forms of equations
3. Inverses and composition
4. Conditional equations and identities
5. Laws of exponents and logs
6. Quadratic equations and factoring
7. Solving nonlinear equations
8. Problem solving
9. Algebra notation and language
10. Transformations
11. Mathematical perseverance
12. Growth mindset
13. Math anxiety
14. Time management
15. Habits of successful math students:
    a. How to read a math textbook
    b. How to study math
    c. How to take notes in math
    d. How to do math homework
    e. Math tests: preparation, taking the exam, post analysis
    f. Theories of learning such as Bloom's taxonomy.
16. Support services

Course Objectives

At the end of the course, the student will be able to:

1. demonstrate competence in the prerequisite skills for College Algebra.
2. demonstrate knowledge of the language and symbols of College Algebra.
3. demonstrate knowledge of the strategies necessary to be a successful math student.

Methods of Instruction

- **Discussion**
- **Lecture**
- **Methods of Instruction Description:**
  Group activities

Assignments

- **Outside Assignments**
  Students will be expected to perform such activities as: reading the textbook, providing written responses to prompts (videos, handouts, etc.), visiting student service areas or solving additional practice problems, to average two hours per week.

Methods of Evaluation

- **Class Participation**
- **Class Work**
- **Home Work**

Texts and Other Instructional Materials

Adopted Textbook

1. Stewart *College Algebra* Edition: 7 2016

Supplemental Texts
None

Instructional Materials

1. TI 83/84 (graphing calculator)

Student Learning Outcomes

1. MATH131S SLO1 **-** Pass the corequisite course, Math 131.

Distance Learning

This course is not Distance Learning.

Board Approval: 02/19/1980
PCA Established: 11/13/2018
DL Conversion:
Date Reviewed: Fall 2018
Catalog Year: 2019 - 2020

Allan Hancock College
Course Outline

Discipline Placement: Mathematics (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 135

Catalog Course Title: Calculus with Applications

Banner Course Title: Calculus with Applications

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	4.000	64.0 - 72.0	
Lab	0.000	0.0 - 0.0	
Outside-of-Class Hours	8.000	128.0 - 144.0	
Total Student Learning Hours	12.0	192.0 - 216.0	4.0
Total Contact Hours	4.0	64.0 - 72.0	

Number of Times Course may be Repeated
0

Grading Method
Letter Grade Only

Requisites

Prerequisite
MATH 331 Algebra 2

Entrance Skills

Upon entering this course, the student should be able to:

MATH 331 - Algebra 2

Catalog Description

Techniques of calculus as applied to problem-solving in business and social, behavioral, and natural sciences, including limits, continuity, differentiation and integration in one and several dimensions, optimization, transcendental functions, and the use of computing technology.

Course Content

Lecture

1. Functions and their graphs, including exponential and logarithmic functions;
2. Limits and intuitive limit definition of derivative;
3. Increments, tangent lines, and rate of change;
4. Rules of differentiation including sum, product, quotient, and the chain rule;
5. Implicit differentiation;
6. Applications of differentiation such as marginal analysis, optimization, and curve sketching;
7. Antiderivatives, indefinite and definite integrals;
8. Multiple techniques of integration including substitution;
9. Area between curves;
10. Approximating definite integral as a sum; and
11. Applications of integration in business and economics.

Course Objectives

At the end of the course, the student will be able to:

1. find the derivatives of polynomial, rational, exponential, and logarithmic functions
2. find the derivatives of functions involving constants, sums, differences, products, quotients, and the chain rule
3. sketch the graph of functions using horizontal and vertical asymptotic, intercepts, and first and second derivatives to determine intervals where the function is increasing and decreasing, maximum and minimum values, intervals of concavity and points of inflection
4. analyze the marginal cost, profit and revenue when given the appropriate function
5. determine maxima and minima in optimization problems using the derivative
6. use derivatives to find rates of change and tangent lines
7. use calculus to analyze revenue, cost and profit
8. find definite and indefinite integrals by using the general integral formulas, integration by substitution, and other integration techniques
9. use integration in business and economics applications.
10. use calculus to solve problems in biology, business and the behavioral sciences.

Methods of Instruction

- **Discussion**
- **Individualized Instruction**
- **Lecture**

Assignments

- **Outside Assignments**
  Reading the textbook and working assigned homework problems based on the Course Objectives, to average 8 hours per week.

Methods of Evaluation

1. Graded homework problems
2. Three to five exams

Sample homework or exam question:

A company has determined that its total revenue in dollars for a product can be modeled by the function R = -x^3 + 450x^2 + 52500x, where x = the number of units sold. What production level will yield the maximum revenue?

Texts and Other Instructional Materials

Adopted Textbook

1. Larson/Edwards *Calculus: An Applied Approach* Edition: 10 2016

Supplemental Texts

1. Graphing Calculator

Instructional Materials

None

Student Learning Outcomes

1. MATH135 SLO1 - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
2. MATH135 SLO2 - Represent mathematical information symbolically, graphically, numerically, and in writing.
3. MATH135 SLO3 - Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
4. MATH135 SLO4 - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
5. MATH135 SLO5 - Check mathematical results for reasonableness.
6. MATH135 SLO6 - Use appropriate technologies to analyze and solve mathematical problems.

Distance Learning

This course is not Distance Learning.

Board Approval: 12/11/2018
PCA Established: 12/11/2018
DL Conversion:
Date Reviewed: Fall 2018
Catalog Year: 2019 - 2020

Allan Hancock College
Course Outline

Discipline Placement: Mathematics (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 135S

Catalog Course Title: Support For Math 135: Calculus with Applications

Banner Course Title: Support For Math 135: Calc w/ Applications

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	3.000	48.0 - 54.0	
Lab	-	-	
Outside-of-Class Hours	2.000	32.0 - 36.0	
Total Student Learning Hours	5.0	80.0 - 90.0	1.5
Total Contact Hours	3.0	48.0 - 54.0	

Number of Times Course may be Repeated
0

Grading Method
Pass/No Pass

Requisites

Corequisite
MATH 135 Calculus with Applications

Entrance Skills

None

Catalog Description

This course is offered as a supplement for students enrolled in Math 135, Calculus with Applications. It is intended for students for whom support has been recommended or required. The course reviews prerequisite topics and strategies to be a more successful math student.

Course Content

Lecture

1. Function notation; domain; range
2. Families of functions; intercepts; forms of equations
3. Inverses and composition
4. Conditional equations and identities
5. Rational and Negative Exponents
6. Quadratic equations and factoring
7. Solving nonlinear equations
8. Problem solving
9. Mathematical perseverance
10. Growth mindset
11. Math anxiety
12. Time management
13. Habits of successful math students:
    a. How to read a math textbook
    b. How to study math
    c. How to take notes in math
    d. How to do math homework
    e. Math tests: preparation, taking the test, post analysis
    f. Theories of learning such as Bloom’s taxonomy
14. Support services

Course Objectives

At the end of the course, the student will be able to:

1. demonstrate competence in the prerequisite skills for Calculus with Applications.
2. demonstrate knowledge of the language and symbols of Calculus.
3. demonstrate knowledge of the strategies necessary to be a successful math student.

Methods of Instruction

- **Discussion**
- **Lecture**
- **Methods of Instruction Description:**
  Group Activities

Assignments

- **Outside Assignments**
  Students will be expected to perform such activities as: reading the textbook, providing written responses to prompts (videos, handouts, etc.), visiting student service areas or solving additional practice problems, to average two hours per week.

Methods of Evaluation

- **Class Participation**
- **Class Work**
- **Home Work**

Texts and Other Instructional Materials

Adopted Textbook

1. Ron Larson *An Applied Approach: Calculus* Edition: 10 edition 2017

Supplemental Texts
None

Instructional Materials

1. TI 83/84 (graphing calculator)

Student Learning Outcomes

1. MATH135S SLO1 - Pass the corequisite course, Math 135.

Distance Learning

This course is not Distance Learning.

Board Approval: 10/13/2015
PCA Established: 11/13/2018
DL Conversion: 10/13/2015
Date Reviewed: Fall 2018
Catalog Year: 2019 - 2020

Allan Hancock College
Course Outline

Discipline Placement: Mathematics (Masters Required) or Engineering (Masters Required) or Physics/Astronomy (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 141

Catalog Course Title: Precalculus

Banner Course Title: Precalculus

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	6.000	96.0 - 108.0	
Lab	0.000	0.0 - 0.0	
Outside-of-Class Hours	12.000	192.0 - 216.0	
Total Student Learning Hours	18.0	288.0 - 324.0	6.0
Total Contact Hours	6.0	96.0 - 108.0	

Number of Times Course may be Repeated
0

Grading Method
Letter Grade Only

Requisites

Prerequisite
MATH 331 Algebra 2
or

Prerequisite
MATH 334

Entrance Skills

Upon entering this course, the student should be able to:

MATH 331 - Algebra 2

Entrance Skills Other (Legacy)

Math 334 (with its prerequisite Math 333) provides the same entrance skills as Math 331.

Catalog Description

Preparation for calculus: the study of polynomial, absolute value, radical, rational, exponential, and logarithmic functions, analytic geometry, and polar coordinates. The study of trigonometric functions, their inverses and their graphs, identities and proofs related to trigonometric expressions, trigonometric equations, solving right triangles, solving triangles using the Law of Cosines and the Law of Sines, and introduction to vectors. This is an accelerated one semester alternative to the two semesters of trigonometry (Math 121) and College Algebra (Math 131).

Course Content

Lecture

1. Functions including linear, polynomial, rational, radical, exponential, absolute value, logarithmic, trigonometric; definitions, evaluation, domain and range;
2. Inverses of functions;
3. Algebra of functions;
4. Graphs of functions including asymptotic behavior, intercepts, and vertices;
5. Transformations of quadratic, absolute value, radical, rational, logarithmic, and exponential functions;
6. Equations including rational, linear, radical, polynomial, exponential, trigonometric, logarithmic, and absolute value;
7. Linear, nonlinear, and absolute value inequalities;
8. Systems of equations and inequalities;
9. Characterization of real and complex zeros of polynomials;
10. Rectangular coordinates, angles and circular/radian measure;
11. Definitions of the six trigonometric functions according to the right triangle, the unit circle, and the rectangular coordinate system;
12. Applications of the right triangle;
13. Simplification of trigonometric expressions;
14. Proofs of trigonometric identities;
15. Graphs of trigonometric functions: period, amplitude, phase shift, and asymptotes;
16. Inverse trigonometric functions, identities, and graphs;
17. Solving Triangles: Law of Sines and Law of Cosines;
18. Polar coordinates and equations;
19. DeMoivre’s Theorem and applications; and
20. Introduction to vectors.

Course Objectives

At the end of the course, the student will be able to:

1. graph functions and relations in rectangular coordinates and polar coordinates.
2. synthesize results from the graphs and/or equations of functions and relations.
3. apply transformations to the graphs of functions and relations.
4. recognize the relationship between functions and their inverses graphically and algebraically.
5. solve and apply equations including rational, linear, polynomial, exponential, absolute value, radical, and logarithmic, and solve linear, nonlinear, and absolute value inequalities.
6. solve systems of equations and inequalities
7. apply functions to model real world applications.
8. prove trigonometric identities.
9. identify special triangles and their related angle and side measures.
10. evaluate the trigonometric function at an angle whose measure is given in degrees and radians.
11. manipulate and simplify a trigonometric expression.
12. solve trigonometric equations, triangles, and applications.
13. graph the basic trigonometric functions and apply changes in period, phase and amplitude to generate new graphs.
14. evaluate and graph inverse trigonometric functions.
15. convert between polar and rectangular coordinates.
16. calculate powers and roots of complex numbers using DeMoivre's Theorem.
17. represent a vector (a quantity with magnitude and direction) in the form and ai+bj.

Methods of Instruction

- **Discussion**
- **Lecture**

Assignments

- **Outside Assignments**
  Reading the textbook and working assigned homework problems based on the Course Objectives, to average 12 hours per week.

Methods of Evaluation

1. Graded homework assignments
2. 3 to 5 exams
3. Comprehensive Final Exam

Sample exam/hw question:

An amoeba population doubles every half hour. If the initial population is 100 amoeba, use algebra to determine exactly how long it will take for the population to reach 15000 amoeba.

Texts and Other Instructional Materials

Adopted Textbook

1. Stewart *Precalculus: Mathematics for Calculus* Edition: 7 2016

Supplemental Texts

1. Graphing Calculator

Instructional Materials
None

Student Learning Outcomes

1. MATH141 SLO1 - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
2. MATH141 SLO2 - Represent mathematical information symbolically, graphically, numerically, and in writing.
3. MATH141 SLO3 - Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
4. MATH141 SLO4 - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
5. MATH141 SLO5 - Check mathematical results for reasonableness.
6. MATH141 SLO6 - Use appropriate technologies to analyze and solve mathematical problems.

Distance Learning

Delivery Methods

- Internet

Instructor Initiated Contact Hours Per Week: 6.000

Contact Types

1. Email Communication (group and/or individual communications)
2. Discussion Board
3. Social Networking pages (i.e. Ning, Facebook, VoiceThread)
4. Other (please specify)
   Blogs
5. Testing

Adjustments to Assignments
HW, Quizzes and Discussions will all be online. Students will have access to video lectures either through a publisher's materials or YouTube.

Adjustments to Evaluation Tools
The main adjustment is that assignments other than exams will be graded by the computer, not by hand.

Strategies to Make Course Accessible to Disabled Students
Met with Nancy Peters. All materials from the publishers are compliant. Will need to make sure that any YouTube videos chosen are close captioned.

Inform Students
Syllabus, emails, Canvas (or other LMS) announcements, Office Hours.

Additional Comments
N/A

Board Approval: 12/11/2018
PCA Established: 12/11/2018
DL Conversion:
Date Reviewed: Fall 2018
Catalog Year: 2019 - 2020

Allan Hancock College
Course Outline

Discipline Placement: Mathematics (Masters Required) or Engineering (Masters Required) or Physics/Astronomy (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 141S

Catalog Course Title: Support For Math 141: Precalculus

Banner Course Title: Support For Math 141: Precalculus

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	3.000	48.0 - 54.0	
Lab	0.000	0.0 - 0.0	
Outside-of-Class Hours	2.000	32.0 - 36.0	
Total Student Learning Hours	5.0	80.0 - 90.0	1.5
Total Contact Hours	3.0	48.0 - 54.0	

Number of Times Course may be Repeated
0

Grading Method
Pass/No Pass

Requisites

Corequisite
MATH 141 Precalculus

Entrance Skills

None

Catalog Description

This course is offered as a supplement for students enrolled in Math 141, Precalculus. It is intended for students for whom support has been recommended or required. The course reviews prerequisite topics and strategies to be a more successful math student.

Course Content

Lecture

1. Function notation; domain; range
2. Families of functions; intercepts; forms of equations
3. Inverses and composition
4. Conditional equations and identities
5. Laws of exponents and logs
6. Quadratic equations and factoring
7. Solving nonlinear equations
8. Problem solving
9. Circles: circumference, area, vocabulary
10. Triangles: special right triangles, similar triangles
11. Unit conversions
12. Transformations
13. Unit circle in radians
14. Trigonometric notation and language
15. Mathematical perseverance
16. Growth mindset
17. Math anxiety
18. Time management
19. Habits of successful math students:
    a. How to read a math textbook
    b. How to study math
    c. How to take notes in math
    d. How to do math homework
    e. Math tests: preparation, taking the test, post analysis
    f. Theories of Learning such as Bloom's taxonomy
20. Support services

Course Objectives

At the end of the course, the student will be able to:

1. demonstrate competence in the prerequisite skills for Precalculus.
2. demonstrate knowledge of the language and symbols of Precalculus.
3. demonstrate knowledge of the strategies necessary to be a successful math student.

Methods of Instruction

- **Discussion**
- **Lecture**
- **Methods of Instruction Description:**
  Group activities

Assignments

- **Outside Assignments**
  Students will be expected to perform such activities as: reading the textbook, providing written responses to prompts (videos, handouts, etc.), visiting student service areas or solving additional practice problems, to average two hours per week.

Methods of Evaluation

- **Class Participation**

- **Class Work**
- **Home Work**

Texts and Other Instructional Materials

Adopted Textbook

1. Stewart *Precalculus: Mathematics for Calculus* Edition: 7 2016

Supplemental Texts

1. TI 83/84 (graphing calculator)

Instructional Materials

None

Student Learning Outcomes

1. MATH141S SLO1 **-** Pass the corequisite course, Math 141.

Distance Learning

This course is not Distance Learning.

Generated on: 11/25/2020 4:27:19 PM

Board Approval: 11/13/2018
PCA Established: 11/13/2018
DL Conversion:
Date Reviewed: Fall 2018
Catalog Year: 2018 - 2019

Allan Hancock College
Course Outline

Discipline Placement: Mathematics (Masters Required) or Economics (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 179A

Catalog Course Title: Support for Math 123: Elementary Statistics

Banner Course Title: Support for Math 123: Elementary Statistics

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	2.000	32.0 - 36.0	
Lab	0.000	0.0 - 0.0	
Outside-of-Class Hours	1.000	16.0 - 18.0	
Total Student Learning Hours	3.0	48.0 - 54.0	1.0
Total Contact Hours	2.0	32.0 - 36.0	

Number of Times Course may be Repeated
0

Grading Method
Pass/No Pass

Requisites

None

Entrance Skills

None

Catalog Description

This course is offered as a supplement for students enrolled in Math 123, Elementary Statistics. It is intended for students for whom support has been recommended or required. The course reviews prerequisite topics and strategies to be a more successful math student.

Course Content

Lecture

1. Fraction to decimal to percent conversions; scientific notation
2. Venn diagrams; "and" versus "or" problems
3. Inequalities: intervals, language and notation
4. Computing statistical formulas using order of operations
5. Linear equations in two variables: graph, rate of change
6. Solving linear equations
7. Use of a calculator in statistics
8. Language and symbols of statistics
9. Mathematical perseverance
10. Growth mindset
11. Math anxiety
12. Time management
13. Habits of successful math students:
    a. How to read a math textbook
    b. How to study math
    c. How to take notes in math
    d. How to do math homework
    e. Math tests: preparation, taking the exam, post analysis
    f. Theories of Learning, such as Bloom’s taxonomy
14. Support services

Course Objectives

At the end of the course, the student will be able to:

1. demonstrate competence in the prerequisite skills for Statistics.
2. demonstrate knowledge of the language and symbols of Statistics.
3. demonstrate knowledge of the strategies necessary to be a successful math student.

Methods of Instruction

- **Discussion**
- **Lecture**
- **Methods of Instruction Description:**
  Group activities

Assignments

- **Outside Assignments**
  Students will be expected to perform such activities as: reading the textbook, providing written responses to prompts (videos, handouts, etc.), visiting student service areas or solving additional practice problems, to average one hour per week.

Methods of Evaluation

- **Class Participation**
- **Class Work**
- **Home Work**

Texts and Other Instructional Materials

Adopted Textbook

1. Larson *Elementary Statistics* Edition: 6 2015

Supplemental Texts
None

Instructional Materials

1. TI-83/84 calculator

Student Learning Outcomes

1. MATH124 SLO1 - Pass the corequisite course, Math 123.

Distance Learning

This course is not Distance Learning.

Board Approval: 03/08/2016
PCA Established: 03/08/2016
DL Conversion: 12/08/2015
Date Reviewed: Spring 2018
Catalog Year: 2018 - 2019

Allan Hancock College
Course Outline

Discipline Placement: Mathematics (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 181

Catalog Course Title: Calculus 1

Banner Course Title: Calculus 1

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	5.000	80.0 - 90.0	
Lab	0.000	0.0 - 0.0	
Outside-of-Class Hours	8.000	128.0 - 144.0	
Total Student Learning Hours	13.0	208.0 - 234.0	4.0
Total Contact Hours	5.0	80.0 - 90.0	

Number of Times Course may be Repeated
0

Grading Method
Letter Grade Only

Requisites

Prerequisite
MATH 141 Precalculus
or

Prerequisite
MATH 121 Trigonometry
and

Prerequisite
MATH 131 College Algebra

Entrance Skills

Upon entering this course, the student should be able to:

MATH 141 - Precalculus

- graph functions and relations in rectangular coordinates and polar coordinates.
- synthesize results from the graphs and/or equations of functions and relations.
- apply transformations to the graphs of functions and relations.
- recognize the relationship between functions and their inverses graphically and algebraically.
- solve and apply equations including rational, linear, polynomial, exponential, absolute value, radical, and logarithmic, and solve linear, nonlinear, and absolute value inequalities.
- solve systems of equations and inequalities
- apply functions to model real world applications.
- prove trigonometric identities.
- identify special triangles and their related angle and side measures.
- evaluate the trigonometric function at an angle whose measure is given in degrees and radians.
- manipulate and simplify a trigonometric expression.
- solve trigonometric equations, triangles, and applications.
- graph the basic trigonometric functions and apply changes in period, phase and amplitude to generate new graphs.
- evaluate and graph inverse trigonometric functions.
- convert between polar and rectangular coordinates.
- calculate powers and roots of complex numbers using DeMoivre's Theorem.
- represent a vector (a quantity with magnitude and direction) in the form <a,b> and ai+bj.

MATH 121 - Trigonometry

- identify special triangles and their related angle and side measures
- evaluate the trigonometric function of an angle in degree and radian measure
- manipulate and simplify a trigonometric expression
- solve trigonometric equations, triangles and applications
- graph the basic trigonometric functions and apply changes in period, phase and amplitude to generate new graphs
- evaluate and graph inverse trigonometric functions
- prove trigonometric identities
- convert between polar and rectangular coordinates and equations
- graph polar equations
- calculate powers and roots of complex numbers using DeMoivre's Theorem
- represent a vector (a quantity with magnitude and direction) in the form <a,b> and ai+bj

MATH 131 - College Algebra

- analyze and investigate properties of functions;
- synthesize results from the graphs and/or equations of functions;
- apply transformations to the graphs of functions;
- recognize the relationship between functions and their inverses graphically and algebraically;
- solve and apply rational, linear, polynomial, radical, absolute value, exponential, and logarithmic equations and solve linear, nonlinear, and absolute value inequalities;
- apply techniques for finding zeros of polynomials and roots of equations;
- apply functions and other algebraic techniques to model real world STEM applications;
- analyze conics algebraically and graphically; and
- use formulas to find sums of finite and infinite series.

Catalog Description

The first in a two-semester sequence comprising first-year calculus. Topics include functions, limits, continuity, the derivative, differentiation of algebraic, trigonometric and transcendental functions, applications of differentiation, the definite integral, and the use of technology to solve calculus problems.

Course Content

Lecture

1. Definition and computation of limits using numerical, graphical, and algebraic approaches
2. Continuity and differentiability of functions
3. Derivative as a limit
4. Interpretation of the derivative as: slope of tangent line, a rate of change
5. Differentiation formulas: constants, power rule, product rule, quotient rule and chain rule
6. Derivatives of transcendental functions such as trigonometric, exponential or logarithmic
7. Implicit differentiation with applications, and differentiation of inverse functions
8. Higher-order derivatives
9. Graphing functions using first and second derivatives, concavity and asymptotes
10. Maximum and minimum values, and optimization
11. Mean Value Theorem
12. Antiderivatives and indefinite integrals
13. Area under a curve
14. Definite integral; Riemann sum
15. Properties of the integral
16. Fundamental Theorem of Calculus
17. Integration by substitution
18. Indeterminate forms and L'Hopital's Rule

Course Objectives

At the end of the course, the student will be able to:

1. compute the limit (if it exists) of a given function as the independent variable approaches a given value.
2. apply the definition of the derivative to find the derivative of a given function.
3. apply differentiation techniques to find the derivative of a given function.
4. write the equation of a line tangent to a given curve at a given point.
5. analyze the continuity of a given function.
6. graph functions of one variable by using information obtained from the derivatives as well as algebraic information.
7. estimate function values near given data points using the tangent line approximation.
8. set up and solve optimization problems.
9. evaluate definite and indefinite integrals of a given function.
10. use a calculator or computer to generate numerical and graphical data to analyze a calculus problem.

Methods of Instruction

- **Discussion**
- **Lecture**

Assignments

- **Outside Assignments**
  Assigned homework problems based on the Course Objectives, to average 8 hours per week.

Methods of Evaluation

1. Graded homework assignments
2. Three to five exams
3. Comprehensive final exam

Texts and Other Instructional Materials

Adopted Textbook

1. Stewart *Calculus Early Transcendentals* Edition: 8 2016

Supplemental Texts

1. Graphing Calculator
2. Electronic version of the adopted text or publisher's software as appropriate.

Instructional Materials

None

Student Learning Outcomes

1. MATH181 SLO1 - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
2. MATH181 SLO2 - Represent mathematical information symbolically, graphically, numerically, and in writing.
3. MATH181 SLO3 - Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
4. MATH181 SLO4 - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
5. MATH181 SLO5 - Check mathematical results for reasonableness.
6. MATH181 SLO6 - Use appropriate technologies to analyze and solve mathematical problems.

Distance Learning

Delivery Methods

- Internet

Instructor Initiated Contact Hours Per Week: 5.000

Contact Types

1. Email Communication (group and/or individual communications)
2. Discussion Board
3. Testing
4. Other (please specify)
   Office Hours, faculty scheduled hours in the Math Center.

Adjustments to Assignments
In class quizzes and written homework assignments will be replaced by online Quizzes and Homework. The exams will still be face to face exams.

Adjustments to Evaluation Tools
The evaluation tools will remain the same: homework, quizzes and exams. The only difference is that the HW and quizzes will be submitted and graded online. No adjustment needed for exams since they will be given face to face.

Strategies to Make Course Accessible to Disabled Students
Met with Adaptive Technology/Internet Access specialist. We will make sure that any videos we use are close captioned.

Inform Students
This information will be on the syllabus as well as on the course Canvas (or other LMS) site, with Announcements made as appropriate.

Additional Comments
N/A

Board Approval: 03/08/2016
PCA Established: 03/08/2016
DL Conversion:
Date Reviewed: Spring 2018
Catalog Year: 2018 - 2019

Allan Hancock College
Course Outline

Discipline Placement: Mathematics (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 182

Catalog Course Title: Calculus 2

Banner Course Title: Calculus 2

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	5.000	80.0 - 90.0	
Lab	0.000	0.0 - 0.0	
Outside-of-Class Hours	8.000	128.0 - 144.0	
Total Student Learning Hours	13.0	208.0 - 234.0	4.0
Total Contact Hours	5.0	80.0 - 90.0	

Number of Times Course may be Repeated
0

Grading Method
Letter Grade Only

Requisites

Prerequisite
MATH 181 Calculus 1

Entrance Skills

Upon entering this course, the student should be able to:

MATH 181 - Calculus 1

- compute the limit (if it exists) of a given function as the independent variable approaches a given value.
- apply the definition of the derivative to find the derivative of a given function.
- apply differentiation techniques to find the derivative of a given function.
- write the equation of a line tangent to a given curve at a given point.
- analyze the continuity of a given function.
- graph functions of one variable by using information obtained from the derivatives as well as algebraic information.

- estimate function values near given data points using the tangent line approximation.
- set up and solve optimization problems.
- evaluate definite and indefinite integrals of a given function.
- use a calculator or computer to generate numerical and graphical data to analyze a calculus problem.

Catalog Description

The second in a two-semester sequence comprising first-year calculus. Topics include methods and applications of integration, sequences and series, Taylor series, an introduction to differential equations, and the use of technology to solve calculus problems.

Course Content

Lecture

1. Areas between curves
2. Volume, volume of a solid of revolution
3. Additional techniques of integration including integration by parts and trigonometric substitution
4. Numerical integration; trapezoidal and Simpson's rule
5. Improper integrals
6. Applications of integration to areas and volumes
7. Additional applications such as work, arc length, area of a surface of revolution, moments and centers of mass, separable differential equations, growth and decay
8. Introduction to sequences and series
9. Multiple tests for convergence of sequences and series
10. Power series, radius of convergence, interval of convergence
11. Differentiation and integration of power series
12. Taylor series expansion of functions
13. Parametric equations and calculus with parametric curves
14. Polar curves and calculus in polar coordinates; Areas between curves

---

Course Objectives

At the end of the course, the student will be able to:

1. evaluate definite and indefinite integrals using a variety of integration formulas and techniques.
2. evaluate improper integrals.
3. apply integration to areas and volumes, and other applications such as work or length of a curve.
4. apply convergence tests to sequences and series.
5. represent functions as power series.

6. solve differential equations graphically, numerically, and analytically.
7. model problems in the natural sciences and the social sciences using differential equations.
8. graph, differentiate and integrate functions in polar and parametric form.

Methods of Instruction

- **Discussion**
- **Lecture**

Assignments

- **Outside Assignments**
  Reading the textbook and working assigned homework problems based on the Course Objectives, to average 8 hours per week.

Methods of Evaluation

1. graded homework assignments
2. three to five exams
3. comprehensive final exam

Texts and Other Instructional Materials

Adopted Textbook

1. Stewart *Calculus Early Transcendentals* Edition: 8th 2016

Supplemental Texts

1. Graphing Calculator

Instructional Materials

None

Student Learning Outcomes

1. MATH182 SLO1 - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
2. MATH182 SLO2 - Represent mathematical information symbolically, graphically, numerically, and in writing.
3. MATH182 SLO3 - Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
4. MATH182 SLO4 - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
5. MATH182 SLO5 - Check mathematical results for reasonableness.
6. MATH182 SLO6 - Use appropriate technologies to analyze and solve mathematical problems.

Distance Learning

This course is not Distance Learning.

Board Approval: 03/08/2016
PCA Established: 03/08/2016
DL Conversion:
Date Reviewed: Spring 2018
Catalog Year: 2018 - 2019

Allan Hancock College
Course Outline

Discipline Placement: Mathematics (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 183

Catalog Course Title: Multivariable Calculus

Banner Course Title: Multivariable Calculus

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	5.000	80.0 - 90.0	
Lab	0.000	0.0 - 0.0	
Outside-of-Class Hours	8.000	128.0 - 144.0	
Total Student Learning Hours	13.0	208.0 - 234.0	4.0
Total Contact Hours	5.0	80.0 - 90.0	

Number of Times Course may be Repeated
0

Grading Method
Letter Grade Only

Requisites

Prerequisite
MATH 182 Calculus 2

Entrance Skills

Upon entering this course, the student should be able to:

MATH 182 - Calculus 2

- evaluate definite and indefinite integrals using a variety of integration formulas and techniques.
- evaluate improper integrals.
- apply integration to areas and volumes, and other applications such as work or length of a curve.
- apply convergence tests to sequences and series.
- represent functions as power series.
- solve differential equations graphically, numerically, and analytically.
- model problems in the natural sciences and the social sciences using differential equations.

- graph, differentiate and integrate functions in polar and parametric form.

Catalog Description

Topics include vectors, functions of several variables; differentiation and integration in several dimensions; change of variables; parameterized curves and vector fields, line and surface integrals; Green's, Stokes', and divergence theorems.

Course Content

Lecture

1. Vectors and vector operations in two and three dimensions
2. Vector and parametric equations of lines and planes; rectangular equation of a plane
3. Dot, cross, and triple products and projections
4. Differentiability and differentiation including partial derivatives, chain rule, higher-order derivatives, directional derivatives, and the gradient
5. Arc length and curvature; tangent, normal, binormal vectors
6. Vector-valued functions and their derivatives and integrals; finding velocity and acceleration
7. Real-valued functions of several variables, level curves and surfaces
8. Limits, continuity, and properties of limits and continuity
9. Local and global maxima and minima extrema, saddle points, and Lagrange multipliers
10. Vector fields including the gradient vector field and conservative fields
11. Double and triple integrals
12. Applications of multiple integration such as area, volume, center of mass, or moments of inertia
13. Change of variables theorem
14. Integrals in polar, cylindrical, and spherical coordinates
15. Line and surface integrals including parametrically defined surfaces
16. Integrals of real-valued functions over surfaces
17. Divergence and curl
18. Green’s, Stokes’, and divergence theorems.

Course Objectives

At the end of the course, the student will be able to:

1. Perform vector operations
2. Determine equations of lines and planes
3. Find the limit of a function at a point
4. Evaluate derivatives
5. Write the equation of the tangent plane at a point
6. Determine differentiability
7. Find local extrema and test for saddle points
8. Solve constraint problems using LaGrange multipliers
9. Compute arc length
10. Find the divergence and curl of a vector field
11. Evaluate two and three dimensional integrals
12. Apply Green's, Stokes', and divergence theorems

Methods of Instruction

- **Discussion**
- **Lecture**

Assignments

- **Outside Assignments**
  Reading textbook and working assigned homework problems based on the Course Objectives, to average 8 hours per week.

Methods of Evaluation

1. Graded homework assignments
2. Three to five exams

Texts and Other Instructional Materials

Adopted Textbook

1. Stewart *Calculus Early Transcendentals* Edition: 8 2016

Supplemental Texts

1. Graphing calculator

Instructional Materials

None

Student Learning Outcomes

1. MATH183 SLO1 - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
2. MATH183 SLO2 - Represent mathematical information symbolically, graphically, numerically, and in writing.
3. MATH183 SLO3 - Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
4. MATH183 SLO4 - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
5. MATH183 SLO5 - Check mathematical results for reasonableness.

6. MATH183 SLO6 - Use appropriate technologies to analyze and solve mathematical problems.

Distance Learning

This course is not Distance Learning.

Generated on: 11/25/2020 4:23:59 PM

Board Approval: 03/19/1991
PCA Established: 03/19/1991
DL Conversion:
Date Reviewed: Spring 2018
Catalog Year: 2018 - 2019

Allan Hancock College
Course Outline

Discipline Placement: Mathematics (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 184

Catalog Course Title: Linear Algebra/Differential Equations

Banner Course Title: Linear Algebra/Diff Equations

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	5.000	80.0 - 90.0	
Lab	0.000	0.0 - 0.0	
Outside-of-Class Hours	10.000	160.0 - 180.0	
Total Student Learning Hours	15.0	240.0 - 270.0	5.0
Total Contact Hours	5.0	80.0 - 90.0	

Number of Times Course may be Repeated
0

Grading Method
Letter Grade Only

Requisites

Prerequisite
MATH 182 Calculus 2

Entrance Skills

Upon entering this course, the student should be able to:

MATH 182 - Calculus 2

Catalog Description

First order ordinary differential equations, including separable, linear, homogeneous of degree zero, Bernoulli and exact with applications and numerical methods. Solutions to higher order differential equations using undetermined coefficients, variation of parameters, and power series, with applications. Solutions to linear and non-linear systems of differential equations, including numerical solutions. Matrix algebra, solutions of linear systems of equations, and determinants. Vector spaces, linear independence, basis and dimension, subspace and inner product space, including the Gram-Schmidt procedure. Linear transformations, kernel and range, eigenvalues, eigenvectors, diagonalization and symmetric matrices.

Course Content

Lecture

1. First order differential equations including separable, homogeneous, exact, and linear;
2. Existence and uniqueness of solutions;
3. Applications of first order differential equations such as circuits, mixture problems, population modeling, orthogonal trajectories, and slope fields;
4. Second order and higher order linear differential equations;
5. Fundamental solutions, independence, Wronskian;
6. Nonhomogeneous equations;
7. Applications of higher order differential equations such as the harmonic oscillator and circuits;
8. Methods of solving differential equations including variation of parameters,Laplacetransforms, and series solutions;
9. Systems of ordinary differential equations
10. Techniques for solving systems of linear equations including Gaussian and Gauss-Jordan elimination and inverse matrices;
11. Matrix algebra, invertibility, and the transpose;
12. Relationship between coefficient matrix invertibility and solutions to a system of linear equations and the inverse matrices;
13. Special matrices: diagonal, triangular, and symmetric;
14. Determinants and their properties;
15. Vector algebra for $\mathbf{R}^n$;
16. Real vector spaces and subspaces, linear independence, and basis and dimension of a vector space;
17. Matrix-generated spaces: row space, column space, null space, rank, nullity;
18. Change of basis;
19. Linear transformations, kernel and range, and inverse linear transformations;
20. Matrices of general linear transformations;
21. Eigenvalues, eigenvectors, eigenspace;
22. Diagonalization including orthogonal diagonalization of symmetric matrices;
23. Dot product, norm of a vector, angle between vectors, orthogonality of two vectors in $\mathbf{R}^n$; and

24. Orthogonal and orthonormal bases: Gram-Schmidt process.

Course Objectives

At the end of the course, the student will be able to:

1. Create and analyze mathematical models using ordinary differential equations
2. Verify solutions of differential equations
3. Identify the type of a given differential equation and select and apply the appropriate analytical technique for finding the solution of first order and selected higher order ordinary differential equations
4. Apply the existence and uniqueness theorems for ordinary differential equations
5. Find power series solutions to ordinary differential equations
6. Determine the Laplace Transform and inverse Laplace Transform of functions
7. Solve Linear Systems of ordinary differential equations
8. Find solutions of systems of equations using various methods appropriate to lower division linear algebra
9. Use bases and orthonormal bases to solve problems in linear algebra
10. Find the dimension of spaces such as those associated with matrices and linear transformations
11. Find eigenvalues and eigenvectors and use them in applications
12. Prove basic results in linear algebra using appropriate proof-writing techniques such as linear independence of vectors; properties of subspaces; linearity, injectivity and surjectivity of functions; and properties of eigenvectors and eigenvalues

---

Methods of Instruction

- **Discussion**
- **Individualized Instruction**
- **Lecture**

Assignments

- **Outside Assignments**
  Reading the textbook and working assigned homework problems based on the Course Objectives, to average 10 hours per week.

Methods of Evaluation

1. Graded homework assignments
2. Three to five exams

Texts and Other Instructional Materials

Adopted Textbook

1. Stephen Goode and Scott Armin *Differential Equations and Linear Algebra* Edition: 4 2017

Supplemental Texts

1. Student’s solutions manual to accompany the text.
2. Graphing calculator.
3. MAPLE software (available in the Math Center).

Instructional Materials
None

Student Learning Outcomes

1. MATH184 SLO1 - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
2. MATH184 SLO2 - Represent mathematical information symbolically, graphically, numerically, and in writing.
3. MATH184 SLO3 - Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
4. MATH184 SLO4 - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
5. MATH184 SLO5 - Check mathematical results for reasonableness.
6. MATH184 SLO6 - Use appropriate technologies to analyze and solve mathematical problems.

Distance Learning

This course is not Distance Learning.

Board Approval: 02/17/2015
PCA Established: 01/22/2015
DL Conversion:
Date Reviewed: Fall 2018
Catalog Year: 2018 - 2019

Allan Hancock College
Course Outline

Discipline Placement: Mathematics (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 309

Catalog Course Title: Algebra and Math Literacy

Banner Course Title: Algebra and Math Literacy

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	5.000	80.0 - 90.0	
Lab	0.000	0.0 - 0.0	
Outside-of-Class Hours	10.000	160.0 - 180.0	
Total Student Learning Hours	15.0	240.0 - 270.0	5.0
Total Contact Hours	5.0	80.0 - 90.0	

Number of Times Course may be Repeated
0

Grading Method
Letter Grade or Pass/No Pass

Requisites

Prerequisite
MATH 521 Foundations of Mathematics
or

Prerequisite
MATH 531 Pre-Algebra

Entrance Skills

Upon entering this course, the student should be able to:

MATH 521 - Foundations of Mathematics

- use rounding, approximation, and numerical evaluation to assess the reasonableness of numerical answers.
- convert between fractions, decimals, and percents.

- calculate with fractions, decimals, and percents.
- perform operations with signed numbers.
- use ratios and rates to compare quantities.
- use proportions to solve problems.
- use basic arithmetic properties to simplify expressions.
- use order of operations for computations with exponents and square roots.
- evaluate algebraic expressions.
- write algebraic expressions to model variable quantities.
- simplify algebraic expressions by combining like terms and using the distributive law.
- solve simple linear equations.
- compute perimeter, area and volume of simple geometric figures.
- read and interpret graphs and tables.
- plot points in the Cartesian coordinate system.
- graph simple equations in two variables.
- practice good study skills: take notes, study effectively, prepare for test.

MATH 531 - Pre-Algebra

- use arithmetic skills, estimation, and a scientific calculator to efficiently add, subtract, multiply, and divide integers, fractions, decimals, and percents.
- calculate the prime factorization, the least common multiple, and the greatest common factor.
- simplify numerical and algebraic expressions involving more than one set of grouping symbols and operations, including exponents and scientific notation.
- evaluate simple algebraic expressions and formulas using given values.
- solve geometric problems involving areas and perimeters.
- change the form of a percent and solve problems containing percentages.
- use inverse operations to solve simple linear equations.
- translate a basic verbal problem into an equation and solve.
- use ratios and proportions to compare quantities and convert units of measure.

Catalog Description

This course will focus on mathematical modeling, including linear equations, quadratic equations and exponential equations. Fundamentals of algebra, geometry, statistics and measurement will be discussed. Numeracy, graphing and problem solving strategies will be incorporated throughout the course.

Course Content

Lecture

1. Functions
2. Graphing
3. Modeling
4. Excel
5. Numeracy
6. Basic Probability/Statistics
7. Measurement and Conversion

8. Geometry

Course Objectives

At the end of the course, the student will be able to:

1. create and use linear models.
2. create and use exponential models.
3. analyze a quadratic models.
4. use basic function vocabulary.
5. determine and analyze average rate of change.
6. determine and analyze the percent rate of change.
7. create, label, read and interpret graphs.
8. interpret the graph of two or more linear equations.
9. interpret the intercepts of a graph.
10. use Excel to write formulas or create algorithms in order to solve problems.
11. calculate and use percentage efficiently.
12. use ratios and proportions to solve problems.
13. calculate and interpret basic probabilities.
14. calculate and interpret mean, median, mode and weighted means.
15. convert between measurements.
16. calculate the perimeter, area and volume of various geometric shapes.
17. demonstrate a familiarly with various angles and degrees.
18. use the Pythagorean theorem to solve various problems.
19. demonstrate an understanding of various algebra topics.

Methods of Instruction

- **Discussion**
- **Lecture**

Assignments

- **Outside Assignments**
  1. Reading the textbook, making a list of key terms and definitions.

  2. Working a set of exercises for each required objective.

Methods of Evaluation

- **Exams/Tests**
- **Home Work**
- **Other**
  Comprehensive final exam.

Texts and Other Instructional Materials

Adopted Textbook

1. Dave Sobecki and Brian Mercer *Pathways to Math Literacy* Edition: 1 2015

Supplemental Texts

None

Instructional Materials
None

Student Learning Outcomes

1. MATH309 SLO1 - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
2. MATH309 SLO2 - Represent mathematical information symbolically, graphically, numerically, and in writing.
3. MATH309 SLO3 - Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
4. MATH309 SLO4 - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
5. MATH309 SLO5 - Check mathematical results for reasonableness.
6. MATH309 SLO6 - Use appropriate technologies to analyze and solve mathematical problems.

Distance Learning

This course is not Distance Learning.

Board Approval: 04/17/1990
PCA Established: 10/30/2014
DL Conversion: 05/13/2003
Date Reviewed: Spring 2018
Catalog Year: 2018 - 2019

Allan Hancock College
Course Outline

Discipline Placement: Mathematics (Masters Required) or Engineering (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 311

Catalog Course Title: Algebra 1

Banner Course Title: Algebra 1

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	4.000	64.0 - 72.0	
Lab	0.000	0.0 - 0.0	
Outside-of-Class Hours	8.000	128.0 - 144.0	
Total Student Learning Hours	12.0	192.0 - 216.0	4.0
Total Contact Hours	4.0	64.0 - 72.0	

Number of Times Course may be Repeated
0

Grading Method
Letter Grade or Pass/No Pass

Requisites

Prerequisite
MATH 531 Pre-Algebra
or

Prerequisite
MATH 521 Foundations of Mathematics
or

Prerequisite
MATH 579A

Entrance Skills

Upon entering this course, the student should be able to:

MATH 531 - Pre-Algebra

- use arithmetic skills, estimation, and a scientific calculator to efficiently add, subtract, multiply, and divide integers, fractions, decimals, and percents.
- calculate the prime factorization, the least common multiple, and the greatest common factor.
- simplify numerical and algebraic expressions involving more than one set of grouping symbols and operations, including exponents and scientific notation.
- evaluate simple algebraic expressions and formulas using given values.
- solve geometric problems involving areas and perimeters.
- change the form of a percent and solve problems containing percentages.
- use inverse operations to solve simple linear equations.
- translate a basic verbal problem into an equation and solve.
- use ratios and proportions to compare quantities and convert units of measure.

MATH 521 - Foundations of Mathematics

- use rounding, approximation, and numerical evaluation to assess the reasonableness of numerical answers.
- convert between fractions, decimals, and percents.
- calculate with fractions, decimals, and percents.
- perform operations with signed numbers.
- use ratios and rates to compare quantities.
- use proportions to solve problems.
- use basic arithmetic properties to simplify expressions.
- use order of operations for computations with exponents and square roots.
- evaluate algebraic expressions.
- write algebraic expressions to model variable quantities.
- simplify algebraic expressions by combining like terms and using the distributive law.
- solve simple linear equations.
- compute perimeter, area and volume of simple geometric figures.
- read and interpret graphs and tables.
- plot points in the Cartesian coordinate system.
- graph simple equations in two variables.
- practice good study skills: take notes, study effectively, prepare for test.

Catalog Description

A study of the fundamental ideas and methods used to simplify expressions and solve equations and inequalities, including applications. Topics covered include the real numbers, linear equations and inequalities, graphing, polynomials, factoring, rational expressions, introduction to square roots, and quadratic equations. This course is not open to students who are enrolled in or have received credit for MATH 313 or 314.

Course Content

Lecture

1. Real Numbers and Variable Expressions

2. Linear Equations in One Variable and Applications

3. Linear Inequalities in One Variable and Applications

4. Equations with Two Variables

5. Polynomials and Factoring

6. Rational Expressions
7. Quadratic Equations and Applications
8. Square Roots

Course Objectives

At the end of the course, the student will be able to:

1. state, use and identify the basic real number axioms.
2. evaluate and simplify variable expressions.
3. solve linear equations in one variable.
4. solve and graph solutions to linear inequalities in one variable.
5. graph linear equations in two variables using slope and intercept methods.
6. add, subtract, multiply and divide polynomials.
7. factor polynomials
8. use factoring to simplify, multiple, and divided rational expressions.
9. use factoring to solve quadratic equations.
10. solve word problems at the elementary algebra level.
11. evaluate and simplify expressions involving square roots

Methods of Instruction

- **Discussion**
- **Individualized Instruction**
- **Lecture**

Assignments

- **Outside Assignments**
  Reading textbook and working assigned homework problems based on the Course Objectives, to average 8 hours per week.

Methods of Evaluation

1. Graded homework assignments
2. Quizzes and/or tests
3. Comprehensive final exam

Texts and Other Instructional Materials

Adopted Textbook

1. Blitzer *Introductory and Intermediate Algebra* Edition: 4 2013

Supplemental Texts

1. Graph paper
2. Scientific calculator

Instructional Materials

None

Student Learning Outcomes

1. MATH311 SLO1 - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
2. MATH311 SLO2 - Represent mathematical information symbolically, graphically, numerically, and in writing.
3. MATH311 SLO3 - Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
4. MATH311 SLO4 - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
5. MATH311 SLO5 - Check mathematical results for reasonableness.
6. MATH311 SLO6 - Use appropriate technologies to analyze and solve mathematical problems.

Distance Learning

Delivery Methods

- Internet

Instructor Initiated Contact Hours Per Week: 4.000

Contact Types

1. Email Communication (group and/or individual communications)
2. Discussion Board
3. Telephone Contacts
4. Orientation Sessions
5. Review Session
6. Testing

Adjustments to Assignments
Homework assignments and quizzes will be online.

Adjustments to Evaluation Tools
I will include a participation grade – they must use the discussion board to get participation credit.

Strategies to Make Course Accessible to Disabled Students
Met with adaptive tech specialist, course is accessible to students with disabilities

Inform Students
My course site has a section on “Getting Help.”

Additional Comments
N/A,

Board Approval: 03/16/1993
PCA Established: 03/08/2016
DL Conversion:
Date Reviewed: Fall 2018
Catalog Year: -

Allan Hancock College
Course Outline

Discipline Placement: Mathematics (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 321

Catalog Course Title: First Year Geometry

Banner Course Title: First Year Geometry

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	3.000	48.0 - 54.0	
Lab	0.000	0.0 - 0.0	
Outside-of-Class Hours	6.000	96.0 - 108.0	
Total Student Learning Hours	9.0	144.0 - 162.0	3.0
Total Contact Hours	3.0	48.0 - 54.0	

Number of Times Course may be Repeated
0

Grading Method
Letter Grade or Pass/No Pass

Requisites

Prerequisite
MATH 309 Algebra and Math Literacy
or

Prerequisite
MATH 311 Algebra 1
or

Prerequisite
completion of Math 313 and 314

Entrance Skills

Upon entering this course, the student should be able to:

MATH 309 - Algebra and Math Literacy

- create and use linear models.
- create and use exponential models.
- analyze a quadratic models.
- use basic function vocabulary.
- determine and analyze average rate of change.
- determine and analyze the percent rate of change.
- create, label, read and interpret graphs.
- interpret the graph of two or more linear equations.
- interpret the intercepts of a graph.
- use Excel to write formulas or create algorithms in order to solve problems.
- calculate and use percentage efficiently.
- use ratios and proportions to solve problems.
- calculate and interpret basic probabilities.
- calculate and interpret mean, median, mode and weighted means.
- convert between measurements.
- calculate the perimeter, area and volume of various geometric shapes.
- demonstrate a familiarly with various angles and degrees.
- use the Pythagorean theorem to solve various problems.
- demonstrate an understanding of various algebra topics.

MATH 311 - Algebra 1

Catalog Description

A study of basic geometry principles including constructions, congruence, parallels, right triangles, similarity, circles, and proofs.

Course Content

Lecture

1. Introduction
    a. deductive reasoning
    b. undefined terms
    c. basic definitions
    d. postulates
    e. theorems
    f. proofs
2. Constructions
3. Congruent triangles
4. Parallel lines
5. Regular Polygons
6. Parallelograms

7. Right triangles

8. Proportion and Similarity

9. Circles

Course Objectives

At the end of the course, the student will be able to:

1. apply basic postulates and theorems of plane geometry.
2. define geometric terms.
3. use deductive reasoning to prove valid geometric statements.
4. recognize a valid argument.
5. translate a word problem into geometric language and use geometry to find the answer.
6. state and apply geometric formulas.
7. perform geometric constructions.

Methods of Instruction

- **Discussion**
- **Lecture**

Assignments

- **Outside Assignments**
  Reading the textbook and working assigned homework problems based on the Course Objectives, to average 6 hours per week.

Methods of Evaluation

1. Quizzes/exams.
2. Graded homework assignments.

Texts and Other Instructional Materials

Adopted Textbook

1. Gustafson *Elementary Geometry* Edition: 3rd 1991

Supplemental Texts

1. Euclid's Elements
2. Compass, straightedge and protractor
3. Abbott, Edwin, A. Flatland: A Romance of Many Dimensions

Instructional Materials

None

Student Learning Outcomes

1. MATH321 SLO1 - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
2. MATH321 SLO2 - Represent mathematical information symbolically, graphically, numerically, and in writing.
3. MATH321 SLO3 - Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
4. MATH321 SLO4 - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
5. MATH321 SLO5 - Check mathematical results for reasonableness.
6. MATH321 SLO6 - Use appropriate technologies to analyze and solve mathematical problems.

Distance Learning

This course is not Distance Learning.

Board Approval: 04/17/1990
PCA Established: 03/08/2016
DL Conversion: 05/13/2003
Date Reviewed: Spring 2018
Catalog Year: 2018 - 2019

Allan Hancock College
Course Outline

Discipline Placement: Mathematics (Masters Required)
Department: Mathematical Sciences
Prefix and Number: MATH 331
Catalog Course Title: Algebra 2
Banner Course Title: Algebra 2

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	5.000	80.0 - 90.0	
Lab	0.000	0.0 - 0.0	
Outside-of-Class Hours	8.000	128.0 - 144.0	
Total Student Learning Hours	13.0	208.0 - 234.0	4.0
Total Contact Hours	5.0	80.0 - 90.0	

Number of Times Course may be Repeated
0

Grading Method
Letter Grade or Pass/No Pass

Requisites

Advisories
MATH 321 First Year Geometry

Prerequisite
MATH 309 Algebra and Math Literacy
or

Prerequisite
MATH 311 Algebra 1
or

Prerequisite
MATH 313 and MATH 314

Entrance Skills

Upon entering this course, the student should be able to:

MATH 321 - First Year Geometry

- apply basic postulates and theorems of plane geometry.
- define geometric terms.
- use deductive reasoning to prove valid geometric statements.
- recognize a valid argument.
- translate a word problem into geometric language and use geometry to find the answer.
- state and apply geometric formulas.
- perform geometric constructions.

MATH 309 - Algebra and Math Literacy

- create and use linear models.
- create and use exponential models.
- analyze a quadratic models.
- use basic function vocabulary.
- determine and analyze average rate of change.
- determine and analyze the percent rate of change.
- create, label, read and interpret graphs.
- interpret the graph of two or more linear equations.
- interpret the intercepts of a graph.
- use Excel to write formulas or create algorithms in order to solve problems.
- calculate and use percentage efficiently.
- use ratios and proportions to solve problems.
- calculate and interpret basic probabilities.
- calculate and interpret mean, median, mode and weighted means.
- convert between measurements.
- calculate the perimeter, area and volume of various geometric shapes.
- demonstrate a familiarly with various angles and degrees.
- use the Pythagorean theorem to solve various problems.
- demonstrate an understanding of various algebra topics.

MATH 311 - Algebra 1

Catalog Description

A continuation of the study of methods used to simplify expressions and solve equations and inequalities, including applications. Topics covered include exponents and radicals, rational and radical expressions, complex numbers, nonlinear equations and inequalities, functions and their graphs, systems of equations, exponential expressions, and logarithms.

Course Content

Lecture

1. Review of Major Topics from Algebra 1

2. Rational Expressions

3. Exponential and Radical Expressions; Complex Numbers

4. Linear and Quadratic Equations and Inequalities; Applications

5. Functions and Graphs
6. Systems of Equations
7. Exponential and Logarithmic Functions

Course Objectives

At the end of the course, the student will be able to:

1. add, subtract, multiply, divide and simplify rational expressions
2. add, subtract, multiply, divide and simplify radical expressions.
3. add, subtract, multiply, divide and simplify exponential expressions.
4. add, subtract, multiply, divide and simplify complex numbers.
5. solve linear, quadratic, rational, radical, exponential, and logarithmic equations.
6. define function, domain, and range; evaluate a function; find the domain, range, and inverse of a function.
7. graph linear and quadratic functions.
8. solve and graph linear inequalities in one and two variables.
9. solve systems of linear equations in two and three variables.
10. evaluate logarithmic expressions, and graph exponential and logarithmic functions.
11. solve word problems at the intermediate algebra level.

Methods of Instruction

- **Discussion**
- **Lecture**

Assignments

- **Outside Assignments**
  Reading the textbook and working assigned homework problems based on the Course Objectives, to average 8 hours per week.

Methods of Evaluation

1. Graded homework assignments
2. Quizzes and/or exams
3. Comprehensive final exam.

Texts and Other Instructional Materials

Adopted Textbook

1. Blitzer *Introductory and Intermediate Algebra for College Students* Edition: 4 2013

Supplemental Texts

1. Student's solution manual (optional)
2. "Flipper" holder for keeping notes and definitions (optional, available in bookstore)
3. Video tapes, CD, and publisher's web site for tutorials
4. Scientific calculator
5. Barclay. Solving Algebra Word Problems. Brooks/Cole. 2005
6. Anem. Conquering Math Anxiety. Brooks/Cole. 2005

7. Bass. Math Study Skills Workbook. Pearson/Addison Wesley. 2009.

Instructional Materials
None

Student Learning Outcomes

1. MATH331 SLO1 - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
2. MATH331 SLO2 - Represent mathematical information symbolically, graphically, numerically, and in writing.
3. MATH331 SLO3 - Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
4. MATH331 SLO4 - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
5. MATH331 SLO5 - Check mathematical results for reasonableness.
6. MATH331 SLO6 - Use appropriate technologies to analyze and solve mathematical problems.

Distance Learning

Delivery Methods

- Internet

Instructor Initiated Contact Hours Per Week: 4.000

Contact Types

1. Discussion Board
2. Telephone Contacts
3. Email Communication (group and/or individual communications)
4. Review Session
5. Testing
6. Other (please specify)
   12 Individual appointments

Adjustments to Assignments
none

Adjustments to Evaluation Tools
none

Strategies to Make Course Accessible to Disabled Students
met with adaptive tech specialist, course is accessible to students with disabilities.

Inform Students
There will be an online orientation posted on the faculty's home page. The URL will be available in the schedule book so that all students will have the chance to get information about the course and all available online services prior to the registration. These services and instruction on how to use them will be also posted as an announcement at the beginning of each semester.

Additional Comments
N/A.

Board Approval: 12/11/2018
PCA Established: 12/11/2018
DL Conversion:
Date Reviewed: Fall 2018
Catalog Year: 2019 - 2020

Allan Hancock College
Course Outline

Discipline Placement: Mathematics (Masters Required) or Engineering (Masters Required) or Physics/Astronomy (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 331S

Catalog Course Title: Support For Math 331: Algebra 2

Banner Course Title: Support For Math 331: Algebra 2

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	2.000	32.0 - 36.0	
Lab	0.000	0.0 - 0.0	
Outside-of-Class Hours	1.000	16.0 - 18.0	
Total Student Learning Hours	3.0	48.0 - 54.0	1.0
Total Contact Hours	2.0	32.0 - 36.0	

Number of Times Course may be Repeated
0

Grading Method
Pass/No Pass

Requisites

Corequisite
MATH 331 Algebra 2

Entrance Skills

None

Catalog Description

This course is offered as a supplement for students enrolled in Math 331; Algebra 2. It is intended for students for whom support has been recommended. or required. The course reviews prerequisite topics and strategies to be a more successful math student.

Course Content

Lecture

1. Linear equations in one variable
2. Linear equations in two variables
3. Linear inequalities in one variable
4. Factoring
5. Rules for exponents
6. Problem solving
7. Mathematical perseverance
8. Growth mindset
9. Math anxiety
10. Time management
11. Habits of successful math students:
    a. How to read a math textbook
    b. How to study math
    c. How to take notes in math
    d. How to do math homework
    e. Math tests: preparation, taking the test, post analysis
    f. Theories of learing such as Bloom's taxonomy
12. Support services

Course Objectives

At the end of the course, the student will be able to:

1. demonstrate competence in the prerequisite skills for Algebra 2.
2. demonstrate knowledge of the language and symbols of Algebra.
3. demonstrate knowledge of the strategies necessary to be a successful math student.

Methods of Instruction

- **Discussion**
- **Lecture**
- **Methods of Instruction Description:**
  Group Activities

Assignments

- **Outside Assignments**
  Students will be expected to perform such activities as: reading the textbook, providing written responses to prompts (videos, handouts, etc.), visiting student service areas or solving additional practice problems, to average one hour per week.

Methods of Evaluation

- **Class Participation**
- **Class Work**
- **Home Work**

Texts and Other Instructional Materials

Adopted Textbook

1. Blitzer *Introductory and Intermediate Algebra* Edition: 4 2013

Supplemental Texts
None

Instructional Materials
None

Student Learning Outcomes

1. MATH331S SLO1 - Pass the corequisite course, Math 331.

Distance Learning

This course is not Distance Learning.

Board Approval: 12/10/2013
PCA Established: 12/10/2013
DL Conversion: 12/08/2015
Date Reviewed: Spring 2018
Catalog Year: 2019 - 2020

Allan Hancock College
Course Outline

Discipline Placement: Mathematics (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 521

Catalog Course Title: Foundations of Mathematics

Banner Course Title: Foundations of Mathematics

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	6.000	96.0 - 108.0	
Lab	-	-	
Outside-of-Class Hours	10.000	160.0 - 180.0	
Total Student Learning Hours	16.0	256.0 - 288.0	5.0
Total Contact Hours	6.0	256.0 - 288.0	

Number of Times Course may be Repeated
None

Grading Method
Letter Grade or Pass/No Pass

Requisites

None

Entrance Skills

None

Catalog Description

Prepares students for the algebra sequence and updates mathematical skills for personal, career, or academic advancement. Topics include: fractions, decimals, percents, measurement,signed numbers, simple equations and modeling. The course emphasizes problem solving techniques that are useful in practical situations. Students should have knowledge of multiplication tables, division, subtraction, number operations and number sense, measurement, basic geometry, and patterns. The course is not open to students who have passed MATH 511.

Course Content

Lecture

1. Basic quantitative reasoning skills
2. Patterns and logical reasoning
3. Problem-solving, estimating and rounding
4. Fractions, decimals and percents
5. Ratios and proportions
6. Order of operations, exponents and square roots
7. Perimeter, area, volume
8. Signed numbers
9. Use of variables as unknowns
10. Simple algebraic skills
    a. Order of operations and numerical evaluation
    b. Simplifying numerical expressions
    c. Combining like terms and applying the distributive law
11. Solving equations
12. Plotting points and graphing a line
13. Basic statistical ideas including: mean, median, mode and interpreting graphs
14. Study skills

Course Objectives

At the end of the course, the student will be able to:

1. use rounding, approximation, and numerical evaluation to assess the reasonableness of numerical answers.
2. convert between fractions, decimals, and percents.
3. calculate with fractions, decimals, and percents.
4. perform operations with signed numbers.
5. use ratios and rates to compare quantities.
6. use proportions to solve problems.
7. use basic arithmetic properties to simplify expressions.
8. use order of operations for computations with exponents and square roots.
9. evaluate algebraic expressions.
10. write algebraic expressions to model variable quantities.
11. simplify algebraic expressions by combining like terms and using the distributive law.
12. solve simple linear equations.

13. compute perimeter, area and volume of simple geometric figures.
14. read and interpret graphs and tables.
15. plot points in the Cartesian coordinate system.
16. graph simple equations in two variables.
17. practice good study skills: take notes, study effectively, prepare for test.

Methods of Instruction

- **Demonstration**
- **Discussion**
- **Lecture**
- **Methods of Instruction Description:**
  including: computer-aided instruction, activity based learning, collaborative learning.

Assignments

- **Outside Assignments**
  Assignments will include problem solving, skill building, study skills, reasoning and applications.

Methods of Evaluation

- **Exams/Tests**
- **Quizzes**
- **Portfolios**
- **Home Work**

Texts and Other Instructional Materials

Adopted Textbook

1. Math 579 Activity Workbook 2013

Supplemental Texts

None

Instructional Materials

None

Student Learning Outcomes

1. MATH521 SLO1 - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
2. MATH521 SLO2 - Represent mathematical information symbolically, graphically, numerically, and in writing.
3. MATH521 SLO3 - Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
4. MATH521 SLO4 - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
5. MATH 521 SLO5 - Check mathematical results for reasonableness.
6. MATH521 SLO6 - Use appropriate technologies to analyze and solve mathematical problems.

Distance Learning

Delivery Methods

- Internet

Instructor Initiated Contact Hours Per Week: 6.000

Contact Types

1. Email Communication (group and/or individual communications)
2. Telephone Contacts
3. Other (please specify)
   CCC Confer, Eyejot and discussions through Curriculum Management System (CMS).
4. Testing
5. Review Session
6. Other (please specify)
   Office Hours

Adjustments to Assignments
The face-to-face version of this course is using a computer software (ALEKS) and students work on the assignments in the classroom as well as outside if they have an Internet access. I am replacing ALEKS with the free online materials such as Khan academy and presence of the instructor via video conferencing using CCC Confer.

Adjustments to Evaluation Tools
Students will be evaluated based on completing the online assignments, participating in online discussions, homework such as a portfolio, and the comprehensive final exam.

Strategies to Make Course Accessible to Disabled Students
I met with Adaptive Technology/Internet Access specialist. Lectures and discussions using CCC confer as well as any video will include "closed captioning". Participants or students who are sight-impaired may use their screen reading equipment to attend a CCC Confer session.

Inform Students
Information will be included in the syllabus and be posted on the course management system. Students will also be reminded about all available resources and help periodically during semester via email.

Additional Comments
N/A

Board Approval: 03/15/1994
PCA Established:
DL Conversion:
Date Reviewed: Fall 2018
Catalog Year: 2018 - 2019

Allan Hancock College
Course Outline

Discipline Placement: Mathematics (Masters Required)

Department: Mathematical Sciences

Prefix and Number: MATH 531

Catalog Course Title: Pre-Algebra

Banner Course Title: Pre-Algebra

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	3.000	48.0 - 54.0	
Lab	0.000	0.0 - 0.0	
Outside-of-Class Hours	-	-	
Total Student Learning Hours	3.0	48.0 - 54.0	3.0
Total Contact Hours	3.0	48.0 - 54.0	

Number of Times Course may be Repeated
0

Grading Method
Letter Grade or Pass/No Pass

Requisites

None

Entrance Skills

None

Catalog Description

Prepares students for the algebra sequence and updates mathematical skills for personal, career, or academic advancement. Topics include: an introduction to using a scientific calculator; estimation; operations with whole numbers, fractions, decimals, percents, and integers; ratios and proportions; unit conversion; numerical and algebraic expressions; exponent rules; translating from words to expressions and equations; solving linear equations.

Course Content

Lecture

1. Introduction to Using a Scientific Calculator (throughout the course)
2. Estimation (throughout the course)
3. Properties of Real Numbers, Fractions, and Proportions
4. Decimals and Percents
5. Integers
6. Numerical and Algebraic Expressions
7. Units of Measure
8. Simple Linear Equations
9. Word Problems (throughout the course)
10. Exponent Rules and Order of Operations

Course Objectives

At the end of the course, the student will be able to:

1. use arithmetic skills, estimation, and a scientific calculator to efficiently add, subtract, multiply, and divide integers, fractions, decimals, and percents.
2. calculate the prime factorization, the least common multiple, and the greatest common factor.
3. simplify numerical and algebraic expressions involving more than one set of grouping symbols and operations, including exponents and scientific notation.
4. evaluate simple algebraic expressions and formulas using given values.
5. solve geometric problems involving areas and perimeters.
6. change the form of a percent and solve problems containing percentages.
7. use inverse operations to solve simple linear equations.
8. translate a basic verbal problem into an equation and solve.
9. use ratios and proportions to compare quantities and convert units of measure.

Methods of Instruction

- **Discussion**
- **Lecture**

Assignments

- **Outside Assignments**
  Reading the textbook and working assigned homework problems based on the Course Objectives, to average 6 hours per week.

Methods of Evaluation

1. Section quizzes
2. Graded homework assignments

3. Attendance and class participation
4. Chapter tests
5. Comprehensive final exam

Texts and Other Instructional Materials

Adopted Textbook

1. Tussy and Gustafson *Pre-Algebra* Edition: 4th 2010

Supplemental Texts

1. Math "Flipper" (reference file of arithmetic terms and operations)
2. Notebook
3. Scientific calculator
4. Video tapes, CD and Publisher's website for tutorials
5. Student Solution Manual available in the bookstore
6. Burrier, Helen. How to Study Math. Prentice Hall. 2006
7. Dr. Stanley Kigelman and Dr. Joseph Warren. Mind Over Math. Wadsworth. 2008.
8. Maddox, Harry. How to Study. CBS Publications. 2003
9. Smith, Richard Manning. Mastering Mathematics: How to Be a GREAT Math Student. McGraw Hill. 2008

Instructional Materials

None

Student Learning Outcomes

1. MATH531 SLO3 - Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems.
2. MATH531 SLO2 - Represent mathematical information symbolically, graphically, numerically, and in writing.
3. MATH531 SLO1 - Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.
4. MATH531 SLO4 - Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models.
5. MATH531 SLO5 - Check mathematical results for reasonableness.
6. MATH531 SLO6 - Use appropriate technologies to analyze and solve mathematical problems.

Distance Learning

This course is not Distance Learning.

DEGREE AND CERTIFICATE REQUIREMENTS

Allan Hancock College
Program Outline

Title: Mathematics
Award Type: Associate in Science for Transfer

The associate in science in mathematics for transfer degree is offered for those students desiring a major in mathematics at a California State University.

Associate Degree for Transfer Requirements

Completion of 60 semester units that are eligible for transfer to the California State University, including the following:

1) The completion of the Intersegmental General Education Transfer Curriculum (IGETC). [The following Allan Hancock College graduation requirements will not be required: Health and Wellness, Multicultural Gender Studies and Allan Hancock College General Education.]

2) A minimum of 18 semester units in a major or area of emphasis, as determined by the community college district.

3) Obtainment of a minimum grade point average of 2.0 with all courses in the major being completed with a grade of "C" or better.

The graduate of the Associate in Science for Transfer in Mathematics will:

- Utilize a variety of problem-solving techniques and strategies to identify, analyze, and solve problems;
- Represent mathematical information symbolically, graphically, numerically, and in writing;
- Interpret and draw inferences from mathematical models such as formulas, graphs, and tables;
- Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models;
- Check mathematical results for reasonableness.
- Use appropriate technologies to analyze and solve mathematical problems.

Program Requirements

A major of 20-21 units is required for the degree.

Units: 17

Required core courses (17 units)

MATH181	Calculus 1	4
MATH182	Calculus 2	4
MATH183	Multivariable Calculus	4
MATH184	Linear Algebra/Differential Equations	5

Select any course from the following (3-4 units) **Units:** 3 - 4

CS111	Fundamentals of Programming 1	4
(CPSLO, CSUB, CSUDH, CSUEB, CSUF, CSUFull, CSUS, CSUSb, CSUSM, HSU, SFSU, SJSU & SSU)		
CS161	Discrete Structures	3
(CSULA, CSUMB & SJSU)		
MATH123	Elementary Statistics	4
(CSUB, CSULA & CSUSM)		

PHYS161	Engineering Physics 1	4

(CPSLO, CSUDH, CSUF, CSULB, CSULA, CSUN, CSUSB & SJSU)

General Education **Units:** 37 - 39

Complete one of the following:

California State University General Education Breadth - 39 units
or

b) Intersegmental General Education Transfer Curriculum (IGETC) - 37 units

Double counting: 6 units may be double counted for the major and general education.
MATH 123, 181, 182, 183, or 184 may be double counted for the major and CSU GE area B4. or IGETC area 2 only, 3 units only .
PHYS 161 may also be double counted for the major and CSU GE area B1 or IGETC area 5A, 3 units only

Select additional CSU transferrable units as needed to achieve 60 units required for the degree

Total Program Units **57.00 - 60.00**

Generated on: 11/13/2020 4:55:09 PM

Allan Hancock College
Program Outline

Title: Mathematics with Physics Emphasis
Award Type: Associate in Arts

The associate in arts degree in math is offered for those students desiring a major in mathematics and recognition of their general education accomplishments.

The graduate of the Associate in Arts in Mathematics with Physics Emphasis will:

- Utilize a variety of problem-solving techniques and strategies to identify, analyze and solve problems;
- Represent mathematical information symbolically, graphically, numerically, and in writing;
- Interpret and draw inferences from mathematical models such as formulas, graphs, and tables;
- Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models;
- Check mathematical results for reasonableness;
- Use appropriate technologies to analyze and solve mathematical problems.

Program Requirements

Units: 21

A major of 25 units is required for the associate in arts degree.

Required core courses (21 units):

MATH181	Calculus 1	4
MATH182	Calculus 2	4
MATH183	Multivariable Calculus	4
MATH184	Linear Algebra/Differential Equations	5
PHYS161	Engineering Physics 1	4

Plus 4 units selected from the following: **Units:** 4

PHYS162	Engineering Physics 2	4
PHYS163	Engineering Physics 3	4

Total Program Units **25**

Generated on: 11/13/2020 4:56:12 PM

Allan Hancock College
Program Outline

Title: Mathematics with Computer Science Emphasis
Award Type: Associate in Arts

The associate in arts degree in math is offered for those students desiring a major in mathematics and recognition of their general education accomplishments.

The graduate of the Associate in Arts in Mathematics with Computer Science Emphasis will:

- Utilize a variety of problem-solving techniques and strategies to identify, analyze, and solve problems;
- Represent mathematical information symbolically, graphically, numerically, and in writing;
- Interpret and draw inferences from mathematical models such as formulas, graphs, and tables;
- Create and analyze mathematical models of real world and/or theoretical situations, including the implications and limitations of those models;
- Check mathematical results for reasonableness.
- Use appropriate technologies to analyze and solve mathematical problems.

Program Requirements

Units: 24

A major of 24 units is required for the associate in arts degree.

Required core courses (24 units):

CS111	Fundamentals of Programming 1	4
CS161	Discrete Structures	3
MATH181	Calculus 1	4
MATH182	Calculus 2	4
MATH183	Multivariable Calculus	4
MATH184	Linear Algebra/Differential Equations	5

Total Program Units 24

Generated on: 11/13/2020 4:59:10 PM

VALIDATION

Validation Team Members

Executive Summary

Plan of Action-Post Validation

VALIDATION

TEAM MEMBERS

PROGRAM REVIEW -- VALIDATION TEAM MEMBERS

TO: Academic Dean　　　　　　　　　　　　　　　　Date: **10/1/2020**

From: **Eui Chung**

We recommend the following persons for consideration for the validation team:

DEPARTMENT **Mathematical Sciences** PROGRAM **Mathematics**

Board Policy requires that the validation team be comprised of the dean of the area, one faculty member from a related discipline/program, and two faculty members from unrelated disciplines.

(Name)	(Related Discipline/Program)
Christine Reed	**MESA/STEM**

(Name)	(Unrelated Discipline/Program)
Julie Knight	**English**

(Name)	(Unrelated Discipline/Program)
Frederic Patrick	**Political Science**

At the option of the self-study team, the validation team may also include one or more of the following: a. someone from a four-year institution in the same discipline; someone from another community college in the same discipline; a high school instructor in the same discipline; a member of an advisory committee for the program. Please complete the following as relevant to your program review.

(Name)　　　　　　　　　　(Title)

Affiliation:________ Telephone Contact Number:________

Address________
(Mailing)　　City/State/Zip　　email address

(Name)　　　　　　　　　　(Title)

Affiliation:________ Telephone Contact Number:________

Address________
(Mailing)　　City/State/Zip　　email address

(Name)　　　　　　　　　　(Title)

Affiliation:________ Telephone Contact Number:________

Address________
(Mailing)　　City/State/Zip　　email address

APPROVED: [signature]　　　　　　10/1/2020
Academic Dean　　　　　　　　　　Date

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY
(Validation Team Report)

The Validation Team for the 2021 Mathematics six-year program review—consisting of English faculty member Julie Knight, Library/Learning Resources Center faculty member Frederic Patrick, Mathematical Sciences Counselor/STEM faculty member Christine Reed, authors of the Program Review and Mathematics faculty members Eui Chung, Scott King, and Jeffery Appel, and Dean Sean J. Abel—met to review and discuss the comprehensive program review for approximately 80 minutes on Tuesday February 2, 2021. It was clear that each member of the team had reviewed the document with care and came prepared to provide feedback and suggestions to the document's authors.

1. MAJOR FINDINGS

Strengths of the program/discipline:

The team members were impressed with the attention to detail, consideration, and thought that was evident throughout the document. The team was able to discuss the content of the document and work with the authors to clarify the impact of the document to the program.

As the team reviewed and reflected upon the document together, they commented on the strength of the curriculum. The team noted that the curriculum is very cohesive and well-written including, and perhaps especially, the Learning Outcomes, their assessment, and use for educational improvement. Of particular emphasis was the manner in which the program has effectively and efficiently developed and implemented AB705.

The team remarked on the dedicated, professional, and knowledgeable full-and part-time faculty who go above and beyond with the college's students and embraces and engages in opportunities for outreach and support of the community through events such as Friday Night Science and BOW WOW. This dedication and the way in which program faculty and staff have worked to assist students that are challenged with mathematics is apparent in strong overall success and retention rates including smaller than expected gaps between face to face course sections and distance (online) course sections. Although both the authors and evaluation team noted narrow success rate gaps among the disaggregated student groups, those too were modest and the members of the depart are aware that there are further strategies the program can employ to continue to close those gaps.

Concerns regarding the program/discipline:

As the team discussed the document with the authors, challenges for the program were remarked upon by all. These challenges included items related to facilities and staffing. Of greatest concern in the area of facilities was the severely deficient classroom spaces in the M-400 building. M-400 is a challenging environment for students. The heating is deficient and the rooms are quite uncomfortably warm during the fall/summer/late spring. Sound is an issue as the rooms echo and bleed through to each other. The other area of concern for facilities was the Math Center. As the mathematics tutoring program has developed, use of the Math Center has flourished. This has created the issue that the Math Center cannot accommodate the number of students needing assistance during peak hours. The authors of the document remarked that during these peak times, students will enter the Math Center, observe the lack of space, and leave without seeking assistance.

The second area of concern was classroom faculty. In recent years, there have been retirements of full-time faculty members which were not replaced immediately. The lack of replacements has impacted the number of part-time faculty members needed to cover the classes. Often, there are insufficient numbers of qualified part-time applicants in the hiring pool which results in both full- and part-time faculty accepting untenable teaching overloads. The Dean and Department Chair have worked with Human Resources to increase the pool, but there are frequently insufficient qualified applicants even in the expanded pool. The small number of qualified applicants for adjunct math teaching positions further highlights the critical need for hiring full-time faculty to fill vacancies created by retirements.

2. RECOMMENDATIONS

Based on the discussion and program challenges, the team and authors proposed recommendations, some of which appeared in the previous Comprehensive Program Review. Perhaps the most pervasive challenge would be addressed by replacing the M-400 building as soon as possible in the facilities plan. 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. The second recommendation is that the Math Center be relocated in a larger facility, such as the replacement for M-400, campus construction allows. This, along with other opportunities to lessen the disproportionate impacts on success should be explored and implemented as soon as practicable. Finally, it is imperative that the district replace the recently retired full-time mathematics faculty member, the faculty member that retired several years ago, as well as replacing future retirements as soon as possible in the future. This, coupled with a robust part-time faculty recruitment pool will allow an even more accessible schedule for students and reduce the possibility of burn out amongst full- and part-time faculty by reducing extreme overloads.

Summary prepared by Sean J. Abel
Dean, Academic Affairs

VALIDATION TEAM SIGNATURE PAGE

Julie L Knight

Fred Patrick

eui chung

Scott King

PLAN OF ACTION (POST-VALIDATION)

PLAN OF ACTION – POST-VALIDATION
(Sixth-Year Evaluation)

DEPARTMENT : Mathematical Sciences PROGRAM: Mathematics

In preparing this document, refer to the Plan of Action developed by the discipline/program during the self-study, and the recommendations of the Validation Team. Note that while the team should strongly consider the recommendations of the validation team, these are recommendations only. However, the team should provide a rationale when choosing to disregard or modify a validation team recommendation.

Identify the actions the discipline/program plans to take during the next six years. Be as specific as possible and indicate target dates. Additionally, indicate by the number each institutional goal and objective which is addressed by each action plan. (See Institutional Goals and Objectives) The completed final plan should be reviewed by the department as a whole.

Please be sure the signature page is attached.

RECOMMENDATIONS TO IMPROVE **STUDENT LEARNING OUTCOMES** AND ACHIEVEMENT	**Theme/Objective/ Strategy Number AHC from Strategic Plan**	**TARGET DATE**
1. Mathematics Department has the departmental retreat every semester to discuss SLO data, decide on any changes and plan for future assessments.	**SLS 1**	**Fall 2021 and then ongoing**
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.	**SLS6, SLS7**	**Ongoing**
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.	**SLS1/SLS2/SLS3 SLS5**	**Ongoing**
4. Continue to remain current in both mathematics and technology.	**IR3**	**Ongoing**

RECOMMENDATIONS TO ACCOMMODATE CHANGES IN **STUDENT CHARACTERISTICS**	**Theme/Objective/ Strategy Number AHC from Strategic Plan**	**TARGET DATE**
Enrollment Changes		
1. Hire new full-time math instructors.	**IR1**	**Fall 2021**
2. Recruit and hire new part-time math instructors and increase the size of the qualified math instructor pool.	**IR1**	**Fall 2021**
3. Increase the number of class sections as demand necessitates.	**SLS1/SLS2/SLS3/ SLS5/SLS6/SLS7**	**Ongoing**
Demographic Changes		
1. Continue to consider accommodations for students who cannot attend day time classes. Offer evening classes, summer classes, and online classes.	**SLS2/SLS3/SLS4 SLS5/SLS7**	**Ongoing**
2. Maintain class offerings at both the Santa Maria campus and the Lompoc Valley Center.	**SLS2/SLS3**	**Ongoing**
RECOMMENDATIONS TO IMPROVE THE **EDUCATIONAL ENVIRONMENT**	**Theme/Objective/ Strategy Number AHC from Strategic Plan**	**TARGET DATE**
Curricular Changes Continue to evaluate and update curriculum, maintaining course currency through AP&P.	**SLS1/SLS2/SLS3**	**Ongoing**
Co-Curricular Changes No co-curricular changes are planned at this time.		
Neighboring College and University Plans Continue monitoring articulation feedback from universities.	**IE1**	**Ongoing**
Related Community Plans Continue to volunteer for Friday Night Science and Bow - Wow. Continue to participate in college outreach efforts.	**SLS2/SLS3/SLS6**	**Ongoing**

RECOMMENDATIONS THAT REQUIRE ADDITIONAL RESOURCES	**Theme/Objective/ Strategy Number AHC from Strategic Plan**	**TARGET DATE**
Facilities 1. 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. **(Validation Team Recommendation #1)**	**IR4**	**Fall 2021**
2. 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. **(Validation Team Recommendation #2)**	**IR4**	**Fall 2021**
3. Add a second computerized classroom/lab.	**IR2/IR4**	**Fall 2021**
Equipment		
1. Update all computerized equipment in M-201 as needed.	**SLS6**	**Fall 2021**
2. Purchase computers and other needed equipment for a second computerized classroom.	**IR2**	**Fall 2022**
Staffing		
1. 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. **(Validation Team Recommendation #3)**	**IR1/IR2**	**Fall 2021**
2. Hire an Instructional Assistant for the Math Center (this position is currently on the Staff Prioritization List).	**IR1/IR2**	**Fall 2021**
3. Plan for potential retirements of full-time mathematics faculty prior to the next program review in 2026.	**IR1**	**As needed**
4. Expand the Math Center hours of operation during the weekends (Saturdays and Sundays).	**IR2**	**Fall 2021**
5. Hire additional student tutors (especially tutors for Statistics and Calculus courses) for the Math Center.	**IR2**	**Fall 2021**

VALIDATION TEAM RECOMMENDTIONS **REASON** **ACTION/CHANGEEGE**
Disregarded or modified (if appropriate)

Recommendation N/A		
Recommendation		
Recommendation		

PLAN OF ACTION – Post-Validation

Review and Approval

Plan Prepared By

Eui Young Chung Date: 2/17/2021

Scott King Date: 2/17/2021

[signature] Date: 2/17/2021

__________ Date: __________

__________ Date: __________

Reviewed:

Department Chair* Dominic J. Del Bello Date: 2/17/2021

*Signature of Department Chair indicates approval by department of Plan of Action.

Reviewed:

Dean of Academic Affairs

Sean J. Abel
Sean J. Abel (Feb 18, 2021 08:31 PST) Date: 2/18/2021

Vice President, Academic Affairs

Robert Curry (Apr 6, 2021 15:37 PDT) Date: Apr 6, 2021

Pages from Program Review Final Packet (YEAR 2020-2021 Mathematics)

Final Audit Report 2021-04-06

Created:	2021-04-06
By:	Lisa Gutierrez (lisa.gutierrez@hancockcollege.edu)
Status:	Signed
Transaction ID:	CBJCHBCAABAAh9nTkFvXTFZbGr60JP2ddd9FZfrc6AkS

"Pages from Program Review Final Packet (YEAR 2020-2021 M athematics)" History

Document created by Lisa Gutierrez (lisa.gutierrez@hancockcollege.edu)
2021-04-06 - 8:59:04 PM GMT- IP address: 209.129.94.61

Document emailed to Robert Curry (rcurry@hancockcollege.edu) for signature
2021-04-06 - 8:59:42 PM GMT

Email viewed by Robert Curry (rcurry@hancockcollege.edu)
2021-04-06 - 10:03:13 PM GMT- IP address: 209.129.94.61

Document e-signed by Robert Curry (rcurry@hancockcollege.edu)
Signature Date: 2021-04-06 - 10:37:17 PM GMT - Time Source: server- IP address: 209.129.94.61

Agreement completed.
2021-04-06 - 10:37:17 PM GMT