



C U Y A M A C A
• C O L L E G E •

Comprehensive Program Review Report

Academic - Mathematics (MATH) - (MS&E)

Program Goals

Assess, revise as needed, and continue to improve Math Pathways (Goal 1, spring 2025)

Program Goal: Assess, revise as needed, and continue to improve Math Pathways

The College Strategic Goal that this department goal most directly support is:

Increase persistence and eliminate equity gaps (re-enrolling the subsequent semester or year)

Goal Status: Active

Mapping

2022 - 2028 Strategic Plan: (X)

- **Increase Persistence and Eliminate Equity Gaps:** Assess, revise as needed, and continue to improve Math Pathways

The College Strategic Goal that this department goal most directly support is:

Increase persistence and eliminate equity gaps (re-enrolling the subsequent semester or year) (X)

Summary of Progress or Results
Summary Date: 12/06/2024

Program Goals

Summary of Progress or Results

Summary of Progress or Results: Action Steps Summary for Program Review Goal 1: Assess, Revise, and Improve Math Pathways

1. Community of Practice (CoP) and Teacher Mentoring:
 - Regular course-specific CoP meetings focus on equity-minded teaching, student-centered learning, and just-in-time remediation.
 - Merged CoPs into a unified "CuyaMATHa CoP" to streamline efforts and address funding and staffing challenges.
 - Launched a mentoring program for faculty using "Interactive Math on Canvas" textbooks, providing training and resources to improve teaching and student engagement.
2. Integration of Equity-Minded Practices:
 - Over 30% of faculty have completed equity-minded training to improve teaching practices.
 - Developed culturally relevant instructional materials for courses like Statistics and Calculus I, earning POCR badges for high-quality online standards.
 - Expanded equity-focused course redesigns for Calculus II and beyond, aiming to reduce equity gaps through exemplary syllabi and workshops.
3. Data-Driven Revisions:
 - Student achievement and equity data are used to refine placement policies and reduce structural biases, improving retention and equity outcomes.
 - Continued reliance on SLO/PLO data and departmental reports to inform pathway improvements.
4. Support for Online, Hybrid, and HyFlex Teaching:
 - Facilitated CoP sessions and training to assist faculty in adopting innovative teaching modalities.
 - Created and shared course-specific Canvas modules and promoted Humanizing STEM courses for faculty development.
 - Expanded HyFlex training to additional part-time faculty and invited interdisciplinary expertise to refine this teaching model.
5. Diversity in Faculty Recruitment and Retention:
 - Addressed faculty shortages through hiring and mentoring initiatives to better reflect the student community's diversity.
 - Emphasized the role of diverse faculty in improving academic and social outcomes and fostering cultural awareness among students.

These actions collectively strengthen Math Pathways, enhance equity, and support both faculty and students in achieving academic success.

Reporting Period: 2024 - 2025

Status: In Progress - will carry forward into next year

What resources, if any, are needed to achieve this goal? (Select all that apply): New faculty position, Supplies, equipment, and/or furniture

Action steps for this academic year.:

a. Community of Practice and teacher mentoring

Since the birth of mathematics education, math teachers have never been trained to teach with culturally relevant materials in an equity-minded teaching and learning environment. Consequently, the Math Department's Community of Practice (CoP) and Teacher Mentoring are essential to the success of Math Pathways. Each course-specific CoP requires all teachers with a current assignment in that course to meet regularly and discuss best teaching practices, just-in-time remediation, teaching and learning in the student-centered classroom, student engagement, and productive struggle.

In the department's CoP groups, assignments are developed to address students' affective needs and internal struggles or fears about being in college and/or learning math. We work on creating culturally relevant teaching materials and developing techniques for using equity-minded practices in the classroom. The CoP members continually develop new instructional materials, classroom activities and assessments, and online assignments in support of these practices.

Program Goals

Summary of Progress or Results

Previously, we had separate communities of practice (CoP) for individual math courses, as well as a dedicated CoP for faculty teaching online math courses. However, due to funding pressures and faculty shortage, we cut down on meeting hours and reduced faculty fatigue. We merged all the CoP groups into a single larger CoP, now called the CuyaMATHa CoP. The college supported this work by funding our CoP meetings and mentor opportunities through spring 2024. The department will continue to implement these changes with the hope the college continues to support this endeavor.

In the fall of 2023, our Math Department launched a mentoring program for faculty teaching a course for the first time using the "Interactive Math on Canvas" textbooks. Experienced Mentors pair and meet with their mentees either during Professional Development (PD) week or the week prior to provide hands-on training and ongoing support. Mentors guide mentees on essential tasks such as uploading course materials to Canvas, exporting and integrating assignments from the MyOpenMath (MOM) software into Canvas, and using shortcuts to streamline navigation through the textbook. Additionally, they focus on strategies for effective communication with students, particularly on how to track and assist those who may be struggling with the material. Mentors also share teaching materials such as handouts and lesson plans and offer insights into best practices for different modes of instruction and managing student engagement in a digital and face-to-face classroom learning environment. This initiative has proven invaluable in empowering faculty to enhance their teaching effectiveness, helping faculty better support their students, and ultimately leading to a more positive learning experience for students.

b. Integration of equity-minded practices into Math Pathways

Over the last few years, 30% of members of the Math Department faculty (part-time and full-time) have participated in the year-long Equity minded Teaching & Learning Institute (and its predecessor). This has helped the math faculty learn ways to use an equity-based lens when designing and teaching their courses. This training also included learning how to humanize our classes. Learning more about the many different reasons students may struggle in our classes as well as how the actions of faculty affect students' behavior, the Math department invites departments such as Tutoring Services, Cuyamaca Cares, Counseling, and others to do presentations when we gather. This has helped the math faculty continue to learn how they can best provide support for students. As a result, our tight-knit community better serves our disproportionately impacted students as it can quickly identify and intervene on behalf of a struggling student to provide that student with the appropriate resources and guidance to keep the student on track. In addition, we continually redesign our instructional materials to better serve our diverse group of students. In the spring of 2021, the department started revising Elementary Statistics course materials on Canvas to incorporate more equity-focused and culturally relevant content, which led to the course earning its first POCR badge shortly thereafter. Similarly, in the fall of 2023, the department updated the MATH 180 materials with the same goals in mind, resulting in the course also receiving its first POCR badge.

Additionally, Math 178 is in the final stages of obtaining its POCR badge, signifying its alignment with high-quality online course standards. The course is already over 90% complete, but a few remaining details, such as refining the content, optimizing student engagement elements, and ensuring accessibility, still need attention for it to gain full approval. Our instructor is committed to completing these enhancements by the end of this fall term, or, if necessary, no later than the upcoming spring semester. This will ensure that the course meets all POCR requirements, allowing students to benefit from a well-structured, high-quality online learning experience.

As previously mentioned, we have just completed developing the *Interactive Math on Canvas* materials for Precalculus, Calculus I, and Discrete Math, which include integrating equitable teaching practices into these courses. Additionally, the Math Department is developing an *Interactive Calculus II on Canvas* textbook, and we hope to complete this work by the end of the fall semester of 2024. We hope to complete the development of the "Interactive Math on Canvas" textbooks for Calculus III and Differential Equations if we have enough funds. Along with this equity-minded course redesign, the department will continue addressing the equity gaps caused by instructors' teaching and learning practices. An example of a

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Summary of Progress or Results

strategy is the creation of exemplary syllabi that are more equity-minded and conducting workshops to share them with instructors within the Math Department.

c. Continued use of data to assess the effectiveness of Math Pathways and make revisions as needed.

Since the launch of Math Pathways in fall 2016, the Math Department has relied heavily on a wide variety of data to inform revisions. This has allowed us to identify where in the math pipeline we were losing students and remove or patch those holes. The data also helped us recognize the structural bias in our previous placement policy and its detrimental effects on disproportionately impacted students. This led to a significant change in how students are placed into classes and subsequently, a significant decrease in equity gaps. The department continues its commitment to data-informed decision-making by collecting and analyzing data from a wide variety of sources, including SLO and PLO data, student achievement data, and equity-minded teaching and learning data, as well as reports from the Institutional Effectiveness, Success, & Equity Office.

d. Assistance for math faculty transitioning to online or hybrid and HyFlex courses.

To support math faculty who are new to teaching online, hybrid, or HyFlex courses, the Math Department has invited them to participate in our CuyaMATHa Community of Practice sessions. In these meetings, faculty explore and discuss strategies for using available online tools to promote a student-centered classroom in an online setting. We share best teaching practices, online resources, and offer mentorship. To make resource-sharing easier, we have developed a Canvas shell with modules tailored to specific courses which instructors can incorporate into their own classes. Additionally, we are promoting Humanizing STEM online courses and encouraging faculty to enroll in these courses as well as relevant training programs.

The Math Department is offering a variety of course formats, including HyFlex, hybrid, and fully online, to better meet the needs of students. Six part-time faculty have been trained to teach Statistics, Precalculus, Business Calculus, Calculus III, and Differential Equations using the HyFlex model.

Moving forward, we will extend invitations to seasoned faculty from other disciplines to join our Community of Practice (CoP) meetings, where they will share their expertise and various skills with the HyFlex teaching model. These faculty members will be compensated with payments sourced from our CoP budget. The primary objective of these sessions is to provide informative presentations on the best practices and practical applications of HyFlex while fostering open conversations with our faculty. We aim to explore the faculty specific needs for support in adopting this modality, address challenges they face in balancing the demands of hybrid and flexible learning environments and discuss how to improve student engagement and interaction in these varied formats. Additionally, these meetings will serve as a platform for exchanging strategies and ideas on how to enhance teaching effectiveness across disciplines using HyFlex, ensuring that both students and instructors thrive in these evolving educational practices.

e. Work toward becoming a department where the faculty reflects the diverse nature of the students and communities we serve.

With one full-time math faculty member retiring in summer 2022, another set to retire in 2025, and a third having accepted the role of MSE Dean, the Math Department is currently facing a faculty shortage. As the department fills these roles or brings in a new part-time faculty, this allows the department to work toward our faculty reflecting the diverse nature of the students and communities we serve. In addition, through mentoring and participation in the CoP, the department aims to improve faculty retention.

Many factors contribute to students' success, including having teachers who are seen and serve as role models, providing inspiration and guidance to prepare students for life beyond school. It is important for students to see diversity among faculty, as research confirms that students perform better both academically and socially in environments where diversity is represented.

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Summary of Progress or Results
Students benefit from role models who share similar ethnicities, races, genders, and backgrounds, allowing for more meaningful connections. Furthermore, interacting with diverse teachers exposes students to different cultures and perspectives, fostering positive relationships within the classroom and the wider community. A more diverse faculty also enriches course content, teaching approaches, and academic ideas, helping students become more culturally and socially aware and strengthening the bonds between teachers, students, and peers.
Summary Date: 09/23/2024 Summary of Progress or Results: In progress Reporting Period: 2024 - 2025 Status: Not Started

Support student success in each Academic and Career Pathway (ACP) (Goal 2, spring 2025)

Program Goal: Support student success in each Academic and Career Pathway (ACP)

The College Strategic Goal that this department goal most directly support is:

Increase completion and eliminate equity gaps (graduating with a degree/certificate, or transferring)

Goal Status: Active

Mapping

2022 - 2028 Strategic Plan: (X)

- **Increase Completion and Eliminate Equity Gaps:** Support student success in each Academic and Career Pathway (ACP)

The College Strategic Goal that this department goal most directly support is:

Increase completion and eliminate equity gaps (graduating with a degree/certificate, or transferring)
(X)

Summary of Progress or Results
Summary Date: 12/06/2024

Program Goals

Summary of Progress or Results

Summary of Progress or Results: Action Steps Summary for Program Review Goal 2: Support Student Success in Each Academic and Career Pathway

1. Collaboration Across Disciplines:
 - Worked with departments such as Business and Center for Water Studies to align math courses and create tailored "Math Prep Modules" that enhance student readiness.
 - Developed equity-minded assignments for Business Calculus and progressed towards earning a POCR badge.
 - Streamlined math preparation with a centralized Canvas "Math Prep Modules" shell for interdisciplinary use, increasing efficiency and collaboration.
 - Partnered with Umoja and Puente programs to integrate culturally responsive practices and build student belonging, with faculty participating in ongoing professional development.
2. Innovative Course Offerings:
 - Introducing a Calculus I corequisite course to provide additional support, leading to higher success rates, especially for students without a Precalculus background.
 - Expanded the use of "Prep Modules" for Calculus I and planned for Zero Textbook Cost materials for Calculus II, III, and Differential Equations, supported by AB 1705 and ZTC grants.
 - Adjusted course offerings based on data, reducing Precalculus sections and increasing Calculus I with support, effectively minimizing exit points.
3. Support for Guided Pathways:
 - Offering staggered start courses (e.g., 12- and 14-week sessions) to accommodate students experiencing setbacks, enabling them to stay on track without delaying progress.
 - Encouraged faculty interventions for struggling students through mentoring and CoP activities, ensuring timely support.
 - Maintained degree maps on the department website for accessible academic planning resources.

These steps aim to strengthen student readiness, streamline academic pathways, and foster success through equity-focused collaboration and innovative offerings.

Reporting Period: 2024 - 2025

Status: In Progress - will carry forward into next year

What resources, if any, are needed to achieve this goal? (Select all that apply): New faculty position

Action steps for this academic year.:

a. Collaboration with various college constituencies to promote student success through math and other pathways.

Over the past two years, we have worked closely with various departments to address three key objectives: 1) ensuring our students are adequately prepared for their respective programs, 2) helping them navigate their required math courses efficiently, and 3) fostering a unified approach to support their progress as they advance along their Academic and Career Pathways. We have partnered with several departments interested in developing Math Prep modules tailored to their courses to enhance student readiness and retention.

For example, the Math Department worked with Cuyamaca's Business Department to improve our Business Calculus course and ensure that the topics covered are relevant for students pursuing business degrees. The Math 178, Calculus for Business and Social Sciences Community of Practice group worked on creating a new design for our wide range of unique and diverse students at Cuyamaca College. Collaborating with Chris O'Byrne, a faculty member from Cuyamaca's Business Department as well as Duane Short, the Business Department Chair at Miramar College, the COP focused discussions on what Business majors need from the course. This has led the group to create equity-minded Excel and modeling

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Summary of Progress or Results

assignments that accompany the other required course materials. Furthermore, the Business Calculus course is currently undergoing the process of receiving a POQR badge. The course is more than 90% complete and requires some final adjustments and polishing before it can be approved. Our instructor is expected to finish the course by the end of this fall term, or by spring semester at the latest.

Last year, we collaborated with a few departments that expressed interest in developing math prep modules for their courses to support their students. Notably, one of our math faculty members, Rachel Polakoski, partnered with the Center for Water Studies (CWS) to create prep modules (just in time review materials) designed to assist their students in mastering key mathematical concepts. This collaboration marked a significant step in interdisciplinary support. Additionally, the Engineering Department Chair, Keenan Murray, has expressed a strong interest in having the Math Department develop prep modules for engineering students. While this collaboration is still in the early stages and hasn't yet begun due to resource constraints, it highlights a growing recognition across departments of the value these modules provide. Consequently, due to a demand for math support across disciplines, we decided to streamline our efforts by creating a centralized Canvas shell titled "Math Prep Modules." Rather than building individualized modules for each department, this single Canvas shell houses all the math prep materials we've developed, making it easier for any department to access and integrate them into their courses. This solution not only maximizes our resources but also fosters and promotes cohesive collaboration across the division "Community", allowing multiple disciplines to benefit from the same high-quality math support. In the future, we aim to expand these resources further and refine them based on departmental needs.

With the large number of math classes available to first-time students, the Math Department will continue to work with Counseling to help guide students into the appropriate math course for their academic and career goals. To support the self-actualization of our underserved student populations and promote their academic success (e.g., increased course completion, degree/certificate attainment, or transfer), the Math and English Departments partnered with our recently hired full-time Umoja counselor (fall 2023) and plan to collaborate with the soon-to-be-hired Puente counselor (spring 2025). As these programs take root, faculty will participate in professional development opportunities, such as the 2025 Summer Learning Institute, to evolve culturally responsive curriculum and pedagogical practices. By integrating Umoja and Puente resources with the Math Department's efforts, we aim to profoundly impact student outcomes, build a sense of belonging, improve engagement, and further close equity gaps with intentional, compassionate, and proactive support.

b. Innovative course offerings designed to streamline student pathways.

In fall 2023, the Math Department began offering a corequisite course for Calculus I to help increase student success and close equity gaps. The Math Department places a strong emphasis on data to drive our decisions and remains deeply committed to data-informed and evidence-based decision making by collecting and analyzing data from a wide variety of sources, including SLO and PLO data, student achievement data, equity-minded teaching and learning data, and our tailored data requests from Institutional Research.

In July 2024, we received a data report initiated by one of our ad-hoc research requests. The report indicated that students who did not take Precalculus in high school and completed their Calculus I course successfully performed better than those who took either Precalculus or Precalculus with support at our college. In fact, for the students who did not have Precalculus in high school, their completion rates in Calculus I have tripled in half the time for those who started in Calculus with support instead of college Precalculus. The data supports the idea that students really benefit from having more contact time with the instructors to get the support they need. The data also shows that students who were required to enroll in Calculus I with support in fall 2023 had a success rate of 71%, which is higher than their counterparts who took Calculus I with optional support course and students who took the stand-alone Calculus I course where their success rates were 50% each. The hope is to eliminate exit points by supporting students who never took Precalculus by allowing them to take Calculus I with support. We will offer more sections of Calculus I with support and gradually decrease or eliminate sections of Precalculus in the future.

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Summary of Progress or Results

As part of the California Learning Labs grant that the Math Department received, we developed "Prep Modules" for Calculus I. The prep modules contain videos, online resources, and formative assignments to support the corequisite support course being created for Calculus I. Since calculus is a difficult subject for students to learn and without a strong algebra and trigonometry background, students often struggle. By specifically targeting the requisite algebra and trigonometry skills, these materials provide students with the direct support they need. Over the next few years, we will write ZTC materials for additional courses. For example, we are working this semester to creating "Prep Modules" modules and "Interactive Math on Canvas" Textbook for Calculus II, and we will develop prep modules and textbooks for Calculus III, and Differential Equations to complete our degree program.

We have received two grants, the AB 1705 grant and the local ZTC grant. These grants will be used/distributed to fund various activities and develop pedagogical practices. The development of Calculus II materials will be funded by the local ZTC and AB 1705 grants. Calculus III is partially funded by AB 1705, and we are looking into a state-wide ZTC fund to support this endeavor. Lastly, we will research state-wide funds to develop materials for Differential Equations.

c. Support Guided Pathways by helping students stay on their chosen path

The Math Department commits to supporting students who, for various academic or personal reasons, experience a setback on their pathway and to get them back on track as soon as possible. Since Statistics classes fill faster during the first week of the semester, we offer staggered start courses, allowing students the opportunity to switch to a new section later in the semester. For example, we offered 12-week, and 14-week classes; this allows them to move forward without costing them an additional semester or money. As part of the department's COP and mentoring opportunities, we encourage faculty to reach out to struggling students so they can intervene before students go astray from their intended path. This activity is something the department would like to focus more on and plans to discuss and brainstorm ideas to help us continue this support. Thus, we are continuing with this activity/action step.

We do not have any new action steps. Our degree maps are posted on the math website for students to access.

Summary Date: 09/23/2024

Summary of Progress or Results: TBD

Reporting Period: 2024 - 2025

Status: In Progress - will carry forward into next year

Program Overview and Update

Lead Author

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Collaborator(s)

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Initial Collaboration Date with Program Team

09/09/2024

Dean/Manager(s)

Tammi Marshall

Initial Collaboration Date with Dean

11/22/2024

Program Reflection and Description

Provide your program's mission statement. If your program does not have a mission statement, what is your timeline for creating a mission statement?

Through our ongoing efforts to eliminate barriers to success and close equity gaps, students are empowered to achieve education's promise.

Is the program description in the current college catalog up to date and accurate?

Yes

Describe how your program advances the College's vision of equity, excellence, and social justice through education. How does the program reflect the College's mission and values?

Note: since we refer to our math classes multiple times throughout this document, we will either mention the course number or the title of each course. The courses are shown below.

Quantitative Reasoning (Math 120), Quantitative Reasoning for Career Ed (Math 121), Statistics (Math 160), Math 160+060 (Statistics with support), Precalculus (Math 176), Precalculus with support (Math 176+076), Calculus I (Math 180), Calculus I with support (Math 180 +080), Business Calculus (Math 178), Calculus II (Math 280), Calculus III (Math 281), Linear Algebra (Math 284), Discrete Math (Math 245), Differential Equations (Math 285).

Our program advances the College's vision of equity, excellence, and social justice in numerous ways. One of the most significant ways that the Math Department is working to advance the College's vision is by providing accessible and high-quality culturally relevant curriculum that empowers students from diverse backgrounds to reach their educational goals. The Math Department has implemented many equity-minded teaching strategies. We see significant value in implementing a student-centered learning environment, applying innovative teaching and learning approaches, and providing a variety of materials and resources and support to the students. We have moved away from traditional teaching and learning approaches to serve and support our students. Moreover, to ensure all students have access to learning materials, and to help reduce students' financial burden, the math faculty have developed or adopted low to no-cost learning materials in Statistics (MATH 160), Precalculus (MATH 176), Calculus I (MATH 180), Calculus II (MATH 280), Discrete Math (MATH 245), and Linear Algebra (MATH 284). We intend to continue this work until low to no-cost materials are implemented in every math course. We develop these courses focusing on equitable assessment and grading strategies, such as allowing students multiple attempts to show what they know. We also discuss instructors' mindsets to foster growth and apply timely interventions by reaching out to students to help increase retention and success. The department's *Interactive Math on Canvas* textbooks use cycles of exploration and discovery, instruction, formative assessments, and instructor feedback. The Math

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Department endeavors to implement evidence-based pedagogical strategies that work toward increasing student success, retention, and persistence.

Furthermore, the Math Department has been a leader within the state in terms of AB 705 and AB 1705, being one of the first community colleges to offer corequisite support courses and access to transfer-level math for all students. Our corequisite support model, revised placement policies, innovative teaching methods, and the removal of the remedial math sequence have significantly shortened the time students need to meet their math requirements. As a result, the "math barrier" at Cuyamaca College is breaking down, leading to greater student success in reaching their academic goals. In addition to previous reforms, our most recent changes include offering Calculus I with corequisite support, which allows students to enroll in the course without having to take precalculus. This new pathway shortens STEM student's unit and time requirement to transfer and complete their degree. The work mentioned above is advanced through our Community of Practice meetings (COP). The goal of the Math COP is to eliminate equity gaps in retention and success rates. During the spring of 2024, the math department consolidated all of our individual course COP groups into one Mega COP group called CuyaMATHa COP. In this new meeting structure, all courses (Statistics, Precalculus, Calculus I, and Calculus II) are comingled during the first hour, then we have breakout sessions for the second hour. During these meetings, faculty discuss ways to improve their teaching methods to increase learning in their classes.

An area for growth within the department is to support social justice in our teaching practices and curriculum. Some instructors have implemented evidence-based strategies learned through their participation in EMTLI, Equitable Grading Strategies, and Humanizing STEM Online. But more work can be done to make this – a department-wide effort. We are aiming to have more discussions on ways to promote and incorporate social justice as a department.

The Math Department encourages its faculty to take responsibility for creating and fostering safe, welcoming, and supportive environments and work intentionally to honor and validate our students' lived experiences. We strive to continuously look at our data to identify equity gaps and apply approaches and practices to eliminate them.

Curriculum Review and Development

Have all of your active course outlines been reviewed within the last five years?

Yes

Please list any planned changes from the current semester forward for curriculum (courses, degrees, and/or certificates) and the rationale for those changes.

- In early summer 2024, the Math Department began developing and redesigning the MATH 280 curriculum with a focus on equity by creating the "*Interactive Calculus II on Canvas*" textbook. This zero-cost, online, interactive textbook is funded through AB 1705 and a local ZTC grant, helping to reduce financial barriers for students. The textbook, built by Cuyamaca's Math Department faculty, draws on several Open Educational Resources. It features numerous content pages, interactive activities, and assignments aimed at boosting student engagement, validating students' identities and cultures and fostering inclusivity, and increasing retention rates at Cuyamaca. We expect to complete the course materials by the end of the fall 2024 semester. The Math Department plans to continue developing *Interactive Math on Canvas* materials for Calculus III in fall 2025 and Differential Equations in fall 2026.
- The Psychology Department has changed placement such that students no longer need Math 060 as a corequisite. As such, the Math Department no longer offers Math 060 to support PSY 215. However, Math 060 will remain as a corequisite for Statistics.
- During fall 2024, we are offering Calculus II online for the first time! We are piloting the *Interactive Calculus II on Canvas* textbook in this online course and one face-to-face section before we implement this ZTC resource in all of our Calculus II sections beginning in spring 2025.

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- Quantitative Reasoning for Career Education course (MATH 121) was introduced in spring 2022 as an alternative to Elementary Statistics (MATH 160) and Quantitative Reasoning (MATH 120), with the intent to provide students with a specialized course tailored to career-focused quantitative skills. Despite the initial interest and good intentions behind offering the course, enrollment numbers were consistently low, with only one student showing interest across two offerings. Given this low enrollment, it has been decided that MATH 121 will be removed from the curriculum. Moving forward, students seeking quantitative reasoning courses can enroll in MATH 120, which adequately covers the necessary skills for career readiness. Effective immediately, MATH 121 will no longer be offered, and non-STEM students will be directed to Quantitative Reasoning or Statistics to meet their educational goals.
- In spring 2024, following a memo from the State Chancellor's Office concerning placement into Calculus I (with or without support) and its alignment with AB 1705 "Validation of Equitable Placement", we decided on a plan for fall 2025. We will continue offering Precalculus in a very limited capacity – cutting down from five sections in fall 2024 to one section in fall 2025. In lieu of Precalculus, we will be offering more sections of Calculus I with support, a course designed to support students who have never taken precalculus through a just-in-time learning approach.
- The Math Department is adopting the new Common Course Numbering system mandated by the state for the Introduction to Statistics course (STAT C1000) in all community colleges (Assembly Bill 1111). As part of this process, we are required to revise the Course Outline of Record (COR), including key sections such as the Catalog Description, Prerequisites, Course Content, Course Objectives, Methods of Evaluation, and Representative Texts. This update will be in the fall 2025 catalog. Other math courses will be revised with guidance from the Common Course Numbering system in future semesters.

For Transfer Programs: How is your program meeting the transfer needs of students, and/or articulation with four-year institutions? If not a transfer program, please enter N/A

We provide two degree options: Mathematics and Mathematics for Transfer. The AS-T degree is aligned with the CSU Mathematics degree, while our local Mathematics degree was revised during our last program review to offer students more pathways to graduation. Both degrees are designed to align with CSU and UC math degrees, facilitating smooth transfers to either system. As we make changes to comply with the Common Course Numbering Project, we will continue to collaborate closely with the CSUs and UCs to ensure articulation agreements are maintained.

We collaborate closely with SDSU to ensure our courses align, making the transfer process seamless for students. We offer transfer degrees and structure our classes so that students can transfer within two years. Our degree maps are regularly updated and available on the Math Department website.

For Career Education Programs: How is your program meeting labor market demand and preparing students to enter the workforce? If not a career education program, please enter N/A

N/A

Student Learning Outcomes (SLO) Assessment

Please upload an updated, current version of your SLO assessment plan. (Ideally, the updated plan should specify assessment semesters for all service areas over the next 4 years, between this comprehensive program review and the next.)

[Math PLO Program Matrix Map.xlsx](#);

[Math SLO Tracking FA 2025 thru SP 2029.xlsx](#)

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What do your SLO data suggest about student experiences, successes, and challenges in your service area?

SLO data reveals challenges in students' skill mastery or conceptual understanding but doesn't always clarify the root causes. To uncover these issues, we rely on supplemental data which guides the department in making effective improvements. The Math Department places a high priority on data analysis to pinpoint areas where students struggle; it uses this information to adjust course content and assessments. We examine various metrics, including student success rates and throughput data. A significant focus remains on developing and refining the Math Pathways program.

Our SLO assessments plan are up-to-date and reviewed regularly within our 4-year assessment cycle, which began in fall 2021 amid the pandemic. This prompted the Math Department to devise a new assessment plan for this period. All course SLOs have been entered and updated in TracDat. We are behind on assessing a few courses' SLO; however, we will assess all based on our plan. Our SLO data synchronizes with student success rates in classes – if students perform well on SLO assessments, they also tend to do well in their classes.

Share an example of meaningful, innovative, equitable, and/or student-centered SLO assessment happening in your program.

We are now assessing our SLO in Canvas.

In the past, we used traditional paper & pencil assessments to assess SLO in our courses, usually as a single question on an exam. Now, we are assessing SLO using Canvas Outcomes, making our assessment process innovative, equitable, and accessible. SLO assessments are embedded into each *Interactive Math on Canvas* textbook, with each SLO assessed multiple times using multiple modalities. We are also able to capture more student data since students can encounter SLO assessments in their own time. The Outcomes feature in Canvas simplifies SLO assessment and makes it meaningful by allowing instructors to track outcome results in real-time while grading. Additionally, some assignments such as quizzes are automatically graded by Canvas, so the attached SLO is automatically assessed. Consequently, the SLO data is automatically generated, and charts and reports are created for the instructor. This facilitates regular ongoing assessments every semester and provides faculty with meaningful and timely information for their classes. We updated our Program Level Outcomes (PLO) to align with the shared STEM ACP. We have completed a mapping between SLO to PLO for assessment and have already begun assessing our new PLO using the course SLO assessments. In addition, some math courses are designed to directly assess PLO through projects. One faculty member assessed Statistics PLO on Canvas. Also, Discrete Math was assessed using a direct assessment of one of the PLO with a project.

Three full-time faculty members have taken the @ONE Equitable Grading Strategies course. Since taking this course, one faculty member has developed a labor-based grading practice in Math 060 and another used Contract Grading in MATH 120 and MATH 020.

Discuss how your SLO data are being used for course and/or program improvements for student retention, success, and/or goal achievement.

The Math Department is taking a thoughtful approach to analyzing and addressing student learning outcomes (SLO) and skill gaps. We have updated SLO to gather more actionable data which is an important step toward improving instruction and assessment. By using supplemental data to investigate the underlying reasons for skill mastery issues, it will enable our department to implement more targeted and meaningful changes. We are continuously rethinking how to best assess the updated course SLO over the next year(s); we will consider the following strategies that might be beneficial:

- **Alignment with Learning Objectives:** Ensure that SLO is clearly aligned with the overarching goals of each course, focusing on critical skills and concepts.
- **Variety of Assessment Methods:** Incorporating different types of assessment (formative, summative, project-based, etc.) might provide a more comprehensive picture of where students are struggling.
- **Data-Driven Intervention:** Once the new assessment plan is implemented, data analysis can help guide instructional improvements, content adjustments, and possibly even offer personalized learning support. We use success rates and throughput data to help inform our program about how students are performing.
- **Faculty Collaboration:** Engaging faculty in regular discussions about SLO assessment results can foster a more cohesive approach to curriculum adjustments and instructional best practices.

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Degree and Certificate Programs

For each degree and certificate indicate how many awards were conferred in the past five years. Please comment on any trends and provide context to explain any increases or decreases.

The Math Certificate and Degrees that have been awarded over the past five years are displayed in the table below. The data suggests that the number of University Studies (Math and Science) degrees and Math for Transfer degrees (IGETC) have grown over the five-year period. There was a clear dip during the COVID period but what follows is a steady increase in subsequent years. Math Degrees and Math for Transfer degrees (CSU) steadily increased from 2019 to 2022 but showed a decline afterward. It is also evident that certificate awards are decreasing, likely due to more students opting to earn associate degrees and transfer to four year institutions to pursue bachelor's or higher degrees.

Degree	2019-20	2020-21	2021-22	2022-23	2023-24	5-Year Total
Mathematics	21	25	31	23	16	116
Math for transfer - CSU	28	28	29	18	18	121
Math for transfer - IGETC	13	5	10	10	14	52
University Studies (Math & Science) CSU	75	52	64	55	54	300
University Studies (Math & Science) IGETC	39	28	36	45	48	196
Certificate	2019-20	2020-21	2021-22	2022-23	2023-24	
	5	7	7	1	3	23

Indicate when each degree and certificate was last reviewed and updated (semester), if this information is available (e.g., via internal program records or Curriculum Committee minutes).

Certificates were reviewed and updated in fall 2021 and the Local & Transfer Degree were reviewed and updated in spring 2024.

Can students complete the degree/certificate requirements within a two-year period?

Yes

If you answered "No" above, please explain.

Yes, our department offers classes in a manner that allows students to complete their degree and/or certificate requirements within a two-year period, in compliance with Title 5 of the California Code of Regulations and Accreditation Standard II.A. When students meet with a Counselor, they develop a comprehensive educational plan tailored to their academic goals, ensuring that they can complete all necessary coursework, including transferable classes, within this time frame. The Math Department also has a degree map posted on the math website for the college, clearly outlining a path to transfer in two years.

How is your program currently assessing its PLOs? Please select all that apply.

SLO-to-PLO Mapping

Direct assessment (e.g., capstone course project)

Shared PLO assessment across the ACP

Please provide the following for each degree/certificate: ? The most recent semester each of your program(s) assessed PLOs; ? Brief summary of findings; and ? Overview of changes made as a result.

We only recently mapped our Student Learning Outcomes (SLO) with our Program Learning Outcomes (PLO) in fall 2023, so we have not yet fully used the PLO data to guide our program decisions. While

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we complete PLO assessments to stay compliant with standards, our department has taken an innovative approach, primarily focusing on student success and retention rates as the main drivers for making programmatic improvements. These metrics have provided us with more actionable insights into areas where we can refine our courses, teaching methods, and support structures.

Are all of your degree maps completed?

Yes

Are the degree maps posted to the college website?

Yes

How are you currently assessing your PLOs? If you are not currently assessing PLOs, what is your plan to assess PLOs in the future?

The department created a mapping between SLO and PLO that has been updated in Nuventive. When the department assesses certain course SLO, our PLO are assessed automatically through this mapping. Additionally, some courses offer a direct assessment to PLO through a project. Data for the PLO direct assessment has been submitted to the college through the PLO assessment form.

How are your PLO assessments informing improvements/changes to your program?

As mentioned earlier, we only recently mapped our Student Learning Outcomes (SLO) with our Program Learning Outcomes (PLO) in fall 2023, so we have not yet fully used the PLO data to guide our program decisions. While we complete PLO assessments to stay compliant with standards, our department has taken an innovative approach, primarily focusing on student success and retention rates as the main drivers for making programmatic improvements. These metrics have provided us with more actionable insights into areas where we can refine our courses, teaching methods, and support structures.

Given the current methods of collecting and sharing PLO data, we have not yet found a direct way to use this data to inform our program's success. The way PLO data is structured and analyzed does not easily lend itself to identifying specific interventions or strategies for improving outcomes in our courses. That said, we are committed to continuing our PLO assessments, and as the processes for analyzing and applying this data evolve, we may find opportunities in the future to integrate PLO insights more meaningfully into our program improvement efforts.

At this time, our focus remains on the data we have found most relevant to student outcomes, while also adhering to the requirements of our Associate degree for Transfer (AD-T) program, which limits how much flexibility we have to make significant changes. The AD-T framework mandates certain course structures and content, making it challenging to implement broader programmatic changes without risking alignment with transfer agreements. Nevertheless, we will continue to explore all available data sources to ensure our program remains both compliant and responsive to student needs.

Student Access and Achievement

Data are required to answer these questions. If no data are available, please describe the plan to gather, discuss, and use these data in the future.

The data are shown below in the next question. **Note:** I could not see any tab or button to upload the data here in this question or table feature to record the data.

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Gender	Fall 2019		Fall 2020		Fall 2021		Fall 2022		Fall 2023	
Female	819	48%	830	51%	722	50%	722	47%	673	44%
Male	892	52%	773	48%	713	49%	798	52%	841	55%
Unknown	13	1%	17	1%	14	1%	25	2%	24	2%
Total	1,724	100%	1,620	100%	1,449	100%	1,545	100%	1,538	100%
Race/Ethnicity	Fall 2019		Fall 2020		Fall 2021		Fall 2022		Fall 2023	
African-American/Non-Hispanic	92	5%	86	5%	88	6%	77	5%	73	5%
American Indian/Alaskan Native	2	0%	7	0%	7	0%	7	0%	5	0%
Asian	109	6%	87	5%	72	5%	75	5%	99	6%
Hispanic/Latino	663	38%	552	34%	510	35%	561	36%	545	35%
Middle Eastern or North African*	136	8%	202	12%	287	20%	335	22%	376	24%
Pacific Islander	6	0%	5	0%	2	0%	5	0%	4	0%
White	610	35%	571	35%	386	27%	380	25%	339	22%
Multiple Races	96	6%	94	6%	75	5%	86	6%	74	5%
Unknown/Non-Respondent	10	1%	16	1%	22	2%	19	1%	23	1%
Total	1,724	100%	1,620	100%	1,449	100%	1,545	100%	1,538	100%
Age	Fall 2019		Fall 2020		Fall 2021		Fall 2022		Fall 2023	
<20 years	716	42%	628	39%	576	40%	669	43%	719	46%
20-24 years	570	33%	543	34%	460	32%	511	33%	524	33%
25-39 years	347	20%	315	19%	309	21%	261	17%	231	15%
40+ years	91	5%	134	8%	104	7%	104	7%	104	7%
Total	1,724	100%	1,620	100%	1,449	100%	1,545	100%	1,578	100%
Educational Goal	Fall 2019		Fall 2020		Fall 2021		Fall 2022		Fall 2023	
Transfer with Degree	1069	62%	989	61%	908	63%	979	63%	900	59%
Transfer without Degree	319	19%	272	17%	227	16%	227	15%	238	15%
Degree Only	168	10%	192	12%	134	9%	138	9%	129	8%

Gender	Spring 2020		Spring 2021		Spring 2022		Spring 2023		Spring 2024	
Female	799	48%	722	51%	684	48%	660	49%	680	46%
Male	852	51%	672	48%	729	51%	664	49%	767	52%
Unknown	15	1%	18	1%	11	1%	23	2%	19	1%
Total	1,666	100%	1,412	100%	1,424	100%	1,347	100%	1,466	100%
Race/Ethnicity	Spring 2020		Spring 2021		Spring 2022		Spring 2023		Spring 2024	
African-American/Non-Hispanic	107	6%	70	5%	89	6%	71	5%	64	4%
American Indian/Alaskan Native	4	0%	9	1%	2	0%	4	0%	3	0%
Asian	110	7%	88	6%	80	6%	102	8%	104	7%
Hispanic/Latino	569	34%	480	34%	505	35%	436	32%	518	35%
Middle Eastern or North African*	152	9%	191	14%	252	18%	327	24%	398	27%
Pacific Islander	7	0%	6	0%	3	0%	6	0%	2	0%
White	600	36%	458	32%	400	28%	312	23%	285	19%
Multiple Races	105	6%	96	7%	72	5%	71	5%	71	5%
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Degree Only	164	10%	131	9%	140	10%	97	7%	105	7%

Please describe any enrollment changes (increases/decreases) over the past 4 years and the context for these changes.

First, since all students have access to any first-tier transfer-level math class regardless of their course-taking history in math, there are no barriers to enrollment.

Enrollment changes over the past 4 years are influenced by various factors. Data shows that there was a decline in enrollments from fall 2020 to fall 2021. These decreases were primarily driven by the impact of Covid; this caused shifts in course modalities. Transitioning to remote teaching was accompanied by many struggles and challenges. Many students faced challenges due to the pandemic, such as financial hardships,

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family obligations, job losses, health issues, technology issues, and living environments that were not productive for study. Thus, Covid, campus closure, and shifting classes to be taught remotely on Zoom have been major factors that contributed to low enrollments.

On the other hand, we see that in fall 2022, spring 2023, and fall 2023 there was an increase in enrollments as students returned to campus. Our goal is to meet the high demand for offering classes in different modalities and to accommodate challenging life circumstances that preclude students from attending classes with certain modalities.

When analyzing enrollment data by race/ethnicity, we find that enrollments for African American/Non-Hispanic and Asian students have remained stable, fluctuating by no more than 1% over the past four years. In contrast, enrollments for Hispanic/Latino and Middle Eastern or north-African students have shown a modest increase. Enrollment among white students has slightly decreased, with spring 2024 showing the lowest numbers.

When breaking down enrollment by gender, there has been a slight decrease in female student enrollments over the last four years, while male student enrollments have seen a small increase.

Additionally, changes in enrollment can be attributed to the STEM disciplines collaborating through Airtable to create a more student-centered schedule, avoiding class overlaps across disciplines. By coordinating with STEM chairs to schedule math classes around STEM courses that include labs and extended meeting hours, we have adjusted schedules to better meet students' needs. This scheduling adjustment has led to some changes in enrollment patterns.

With direct access to the transfer-level math class they need for their major, students are no longer spending multiple semesters struggling through the developmental math pipeline. As such, enrollments overall are down which is not necessarily a bad thing. Instead, we interpret this decline to mean that students are able to complete their math requirements in less time, therefore students are taking fewer math classes on average.

Gender	Fall 2019		Fall 2020		Fall 2021		Fall 2022		Fall 2023	
Female	819	48%	830	51%	722	50%	722	47%	673	44%
Male	892	52%	773	48%	713	49%	798	52%	841	55%
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Degree Only	164	10%	131	9%	140	10%	97	7%	105	7%

If your program has seen a significant decline in enrollment over the past 4 years, what resources or support would be helpful to improve program enrollment and access?

Math Program	Term	Enrollment
	Fall 2019	2042
	Fall 2020	1950
	Fall 2021	1715
	Fall 2022	1826
	Fall 2023	1840
	Total	9373

As seen in the table above, fall enrollments over the past five years showed a dip during the height of the pandemic and has since steadily increased. This matches enrollment trends collegewide (and statewide), so we do not think there has been a significant decline in enrollment over the past 4 years.

What is the program doing to increase student enrollment or access?

The Math Department is actively working to increase student enrollment and improve access through several key initiatives:

- **Flexible Course Modalities:** To accommodate a wide range of student needs, the department offers courses in various formats, including online, in-person, and HyFlex. This flexibility allows students to choose the mode of instruction that best fits their schedule and circumstances. Online classes are designed to expand access for students who face barriers to attending in-person classes, such as work, family commitments, or health issues.
- **Staggered Start Courses:** The department offers 12-week, 14-week, and other staggered start classes, enabling students to switch to a new section if they experience setbacks early in the semester. This option prevents students from losing momentum or having to wait until the next term to continue their

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coursework, helping them stay on track without incurring additional costs or extending their time in school.

- **Equitable Placement and Support:** In response to AB 1705 and the Validation of Equitable Placement, the department is increasing sections of Calculus I with support to attract students who may not have a strong Precalculus background or have never taken Precalculus. This change aims to reduce barriers to enrolling in higher-level math courses and provide additional support to help students succeed. By increasing access and success in Calculus I, our STEM colleagues are seeing an increase in enrollments as well, offering many more sections of courses with a Calculus I prerequisite/corequisite.
- **Student-Centered Scheduling:** Through collaboration with other STEM disciplines via Airtable, the department is working to create a more student-centered schedule. By minimizing overlap between courses across different departments, students can enroll in a wider range of classes without conflicting schedules, which promotes higher enrollment and retention.
- **Interactive, Zero-Cost Textbooks:** The department is developing interactive textbooks to reduce educational costs for students. By providing affordable and engaging learning materials, the department seeks to enhance learning outcomes while removing financial barriers that might deter students from enrolling in math courses.

These combined efforts demonstrate a strong commitment to increasing student enrollment and access, while ensuring that students receive the support and resources they need to succeed.

What is your program’s overall course success rate? How has it changed over the past 4-5 years?

The data below shows that in spring 2020, before the impact of COVID-19 was fully felt, student success rates in all math courses stood at 75%. However, these rates have declined each year since, dropping to as low as 68% in fall 2021 and 69% in spring 2022 through fall 2023. The primary cause of this decline has been the challenges posed by COVID-19, including adjustments to new course modalities and the need to learn new technologies. Additionally, the faculty had to adapt to these changes and undergo extensive training to effectively use new teaching tools. Despite these setbacks, there was a notable improvement in spring 2024, with success rates rising to 76%. It is also worth noting that overall success rates in spring were higher than those in fall, with spring rates at 74% compared to 70% in the fall. This might be due to the fact that spring semester students are often in at least their second semester of college and have a better sense of the “hidden rules of college” and how to persist and succeed in their courses.

The small rise in success rates has largely been fueled by improvements in courses that include a support option, such as Statistics, Precalculus, Calculus I, and Business Calculus. We believe this progress stems from our Community of Practice program and various teacher-training efforts organized by the department. By focusing on enhancing teaching methods and meeting students at their current skill levels, rather than where we expect them to be, we’ve shifted toward a more student-centered learning model that fosters greater success.

In fall 2023, we introduced Calculus I with corequisite support for the first time. Students who place into either Precalculus or Calculus I are eligible for this course combination. By expanding the number of sections offered, we aim to further close equity gaps and boost student success and persistence in the calculus sequence, ultimately strengthening the STEM pipeline.

Term	Enrollment	Successful	Success Rates	Term	Enrollment	Successful	Success Rates
Fall 2019	2042	1456	71%	Spring 2020	1976	1480	75%
Fall 2020	1950	1432	73%	Spring 2021	1680	1315	78%
Fall 2021	1715	1160	68%	Spring 2022	1733	1192	69%

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Fall 2022	1826	1251	69%	Spring 2023	1614	1150	71%
Fall 2023	1840	1271	69%	Spring 2024	1842	1396	76%
Total	9373	6574	70%	Total	8845	6533	74%

Which groups are experiencing equity gaps in your program for success rate and/or retention rate?

Equity gaps appear with the following student population groups: African Americans/Black Non-Hispanic, Hispanic/Latino, and Multiple Races/Ethnicities.

We observe that success and retention rates are comparable between genders, with male students performing slightly better than female students. While we do see an equity gap regarding success rates for African American/Black Non-Hispanic, Hispanic/Latino students, and Multiple Races/Ethnicities, these gaps have slightly decreased over the years. In spring 2020, African American/Black Non-Hispanic student success rates were 28 percentage points below White students. This equity gap has decreased each year since, to a gap of 5 percentage points for spring 2024. Similar trends are seen from fall 2019 – fall 2023.

Hispanic/Latino students have seen a similar narrowing of the success rate equity gap, from a 17-percentage points gap in spring 2020 to a 12-percentage points gap for spring 2024; but it is still a high gap. Though this is a significant improvement, these equity gaps still exist. Additionally, we observe that Middle Eastern or North-African students do not experience any equity gaps; they are doing well. With the Math Department's commitment to equity-minded teaching practices, we expect these gaps to continue to narrow.

In terms of retention rates, the same group of students experienced equity gaps. For example, African American/Black Non-Hispanic and Hispanic/Latino students—experienced a significant drop from 83%, 83% in fall 2019 to 59%, 71% in spring 2020 respectively, with spring 2020 marking the lowest point. This decline coincided with the onset of the COVID-19 pandemic, which likely exacerbated challenges these students faced, including access to resources and support systems. After this sharp decrease, retention rates began to improve gradually, with a notable recovery to around 81% by spring 2024. This rebound may reflect increased institutional support, adapted learning environments, and targeted interventions aimed at improving student success and retention. Despite the progress, ongoing efforts are still needed to close the retention gaps and ensure equitable outcomes for these student populations.

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Retention and Success Rates by Distance Education Status and Race/Ethnicity: 100% Online														
2	MATH														
3	Ethnicity	Term	Enrollment	Retained	Retention Rate	Equity Gap in Retention Rate*	Successful	Success Rate	Equity Gap in Success Rate*						
4	African-American/Black Non-Hispanic	Fall 2019	14	7	50%	Equity gap	6	43%	Equity gap						
5		Fall 2020	12	7	58%	Equity gap	5	42%	Equity gap						
6		Fall 2021	30	19	63%	Equity gap	12	40%	Equity gap						
7		Fall 2022	59	51	86%		37	63%	Equity gap						
8		Fall 2023	44	35	80%	Equity gap	23	52%	Equity gap						
9		Total	159	119	75%	Equity gap	83	52%	Equity gap						
10	American Indian/Alaskan Native	Fall 2019	0	0	--		0	--							
11		Fall 2020	1	0	0%		0	0%							
12		Fall 2021	1	0	0%		0	0%							
13		Fall 2022	5	3	60%		1	20%							
14		Fall 2023	2	1	50%		1	50%							
15		Total	9	4	44%		2	22%							
16	Asian	Fall 2019	13	8	62%	Equity gap	7	54%	Equity gap						
17		Fall 2020	12	10	83%	Equity gap	9	75%	Equity gap						
18		Fall 2021	14	11	79%		10	71%							
19		Fall 2022	55	48	87%		46	84%							
20		Fall 2023	55	48	87%		37	67%	Equity gap						
21		Total	149	128	86%		109	73%							
22	Hispanic/Latino	Fall 2019	55	34	62%	Equity gap	30	55%	Equity gap						
23		Fall 2020	77	57	74%	Equity gap	39	51%	Equity gap						
24		Fall 2021	114	76	67%	Equity gap	54	47%	Equity gap						
25		Fall 2022	423	350	83%	Equity gap	257	61%	Equity gap						
26		Fall 2023	253	182	72%	Equity gap	127	50%	Equity gap						
27		Total	922	699	76%	Equity gap	507	55%	Equity gap						
28	Middle Eastern or North African**	Fall 2019	10	8	80%		8	80%							
29		Fall 2020	29	26	90%		24	83%							
30		Fall 2021	94	73	78%		64	68%							
31		Fall 2022	289	258	89%		203	70%							
32		Fall 2023	253	232	92%		204	81%							
33		Total	675	597	88%		507	75%							
34	Pacific Islander	Fall 2019	1	0	0%		0	0%							
35		Fall 2020	1	1	100%		0	0%							
36		Fall 2021	1	1	100%		1	100%							
37		Fall 2022	3	1	33%		1	33%							
38		Fall 2023	2	1	50%		0	0%							
39		Total	8	4	50%		2	25%							
40	White Non-Hispanic	Fall 2019	73	58	79%	--	54	74%	--						
41		Fall 2020	138	122	88%	--	108	78%	--						
42		Fall 2021	106	83	78%	--	72	68%	--						
43		Fall 2022	323	283	88%	--	228	71%	--						
44		Fall 2023	207	180	87%	--	152	73%	--						
45		Total	847	726	86%	--	614	72%	--						
46	Multiple Races/Ethnicities	Fall 2019	17	11	65%	Equity gap	9	53%	Equity gap						
47		Fall 2020	14	11	79%	Equity gap	9	64%	Equity gap						
48		Fall 2021	33	22	67%	Equity gap	16	48%	Equity gap						
49		Fall 2022	66	53	80%	Equity gap	44	67%	Equity gap						
50		Fall 2023	41	33	80%	Equity gap	26	63%	Equity gap						
51		Total	171	130	76%	Equity gap	104	61%	Equity gap						
52	Unknown/Non-Respondent	Fall 2019	3	2	67%	--	2	67%	--						
53		Fall 2020	4	3	75%	--	2	50%	--						
54		Fall 2021	8	5	63%	--	5	63%	--						
55		Fall 2022	11	10	91%	--	9	82%	--						
56		Fall 2023	12	9	75%	--	5	42%	--						
57		Total	38	29	76%	--	23	61%	--						
58	*Equity gaps are identified for groups that have at least 10 enrollments and experience a retention or success rate that has a percentage point gap of 3% or more when compared to the white student group in the same semester(s).														
59	**Middle Eastern or North African race/ethnicity category was implemented on our application in December 2018, so this information has not yet been collected for many of our students.														
60															
61															
62															

Please note that this Excel file contains multiple spreadsheets, which are accessible via the blue and yellow tabs below.

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Retention and Success Rates by Distance Education Status and Race/Ethnicity: On Campus								
ACCT								
Ethnicity	Term	Enrollment	Retained	Retention Rate	Equity Gap in Retention Rate*	Successful	Success Rate	Equity Gap in Success Rate*
African-American/Black Non-Hispanic	Spring 2020	11	7	64%	Equity gap	5	45%	Equity gap
	Spring 2021	3	2	67%		2	67%	
	Spring 2022	0	0	--	--	0	--	--
	Spring 2023	0	0	--	--	0	--	--
	Spring 2024	0	0	--	--	0	--	--
<i>Total</i>	<i>14</i>	<i>9</i>	<i>64%</i>	<i>Equity gap</i>	<i>7</i>	<i>50%</i>	<i>Equity gap</i>	
American Indian/Alaskan Native	Spring 2020	1	1	100%		1	100%	
	Spring 2021	0	0	--	--	0	--	--
	Spring 2022	0	0	--	--	0	--	--
	Spring 2023	0	0	--	--	0	--	--
	Spring 2024	0	0	--	--	0	--	--
<i>Total</i>	<i>1</i>	<i>1</i>	<i>100%</i>		<i>1</i>	<i>100%</i>		
Asian	Spring 2020	1	1	100%		1	100%	
	Spring 2021	4	4	100%		3	75%	
	Spring 2022	0	0	--	--	0	--	--
	Spring 2023	0	0	--	--	0	--	--
	Spring 2024	1	1	100%		1	100%	
<i>Total</i>	<i>6</i>	<i>6</i>	<i>100%</i>		<i>5</i>	<i>83%</i>		
Hispanic/Latino	Spring 2020	44	38	86%	Equity gap	33	75%	Equity gap
	Spring 2021	17	16	94%		13	76%	Equity gap
	Spring 2022	0	0	--	--	0	--	--
	Spring 2023	0	0	--	--	0	--	--
	Spring 2024	4	4	100%		3	75%	
<i>Total</i>	<i>65</i>	<i>58</i>	<i>89%</i>	<i>Equity gap</i>	<i>49</i>	<i>75%</i>	<i>Equity gap</i>	
Middle Eastern or North African**	Spring 2020	4	3	75%		1	25%	
	Spring 2021	5	4	80%		4	80%	
	Spring 2022	0	0	--	--	0	--	--
	Spring 2023	0	0	--	--	0	--	--
	Spring 2024	1	1	100%		1	100%	
<i>Total</i>	<i>10</i>	<i>8</i>	<i>80%</i>	<i>Equity gap</i>	<i>6</i>	<i>60%</i>	<i>Equity gap</i>	
Pacific Islander	Spring 2020	0	0	--	--	0	--	--
	Spring 2021	0	0	--	--	0	--	--
	Spring 2022	0	0	--	--	0	--	--
	Spring 2023	0	0	--	--	0	--	--
	Spring 2024	0	0	--	--	0	--	--
<i>Total</i>	<i>0</i>	<i>0</i>	<i>--</i>	<i>--</i>	<i>0</i>	<i>--</i>	<i>--</i>	
White Non-Hispanic	Spring 2020	40	36	90%		36	90%	
	Spring 2021	13	11	85%		11	85%	
	Spring 2022	0	0	--	--	0	--	--
	Spring 2023	0	0	--	--	0	--	--
	Spring 2024	8	8	100%		8	100%	
<i>Total</i>	<i>61</i>	<i>55</i>	<i>90%</i>		<i>55</i>	<i>90%</i>		
Multiple Races/Ethnicities	Spring 2020	4	3	75%		3	75%	
	Spring 2021	0	0	--	--	0	--	--
	Spring 2022	0	0	--	--	0	--	--
	Spring 2023	0	0	--	--	0	--	--
	Spring 2024	0	0	--	--	0	--	--
<i>Total</i>	<i>4</i>	<i>3</i>	<i>75%</i>		<i>3</i>	<i>75%</i>		
Unknown/Non-Respondent	Spring 2020	1	1	100%		1	100%	
	Spring 2021	1	1	100%		1	100%	
	Spring 2022	0	0	--	--	0	--	--
	Spring 2023	0	0	--	--	0	--	--
	Spring 2024	0	0	--	--	0	--	--
<i>Total</i>	<i>2</i>	<i>2</i>	<i>100%</i>		<i>2</i>	<i>100%</i>		

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What department/discipline (or institutional) factors may be contributing to these lower rates of success for these groups of students?

The factors contributing to lower rates of success for certain student groups, as highlighted, point to both department/discipline-specific and institutional challenges:

- Student hardships post-COVID-19 and wildfires - External events, such as the COVID-19 pandemic and wildfires, create additional stress and challenges for students. These hardships may cause students to drop out or lose focus due to mental health struggles, displacement, or financial strain.
- Insufficient full-time faculty could be another factor. A shortage of full-time faculty limits the capacity for the department to engage in innovative efforts aimed at closing equity gaps. Adjunct faculty may not have the time or resources to participate in initiatives designed to address these issues.
- Many students face financial hardships due to delays in receiving financial aid, which could affect their ability to purchase textbooks or other resources in a timely manner. The absence of zero-cost or low-cost textbook options for some math classes exacerbates this issue, creating barriers to learning from the start.

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- Limited Tutoring availability - The low number of tutors, especially during evenings and weekends (due to budget restrictions), limits students' ability to get timely help. Many students may have jobs or family responsibilities, making traditional daytime tutoring inaccessible, which is crucial for academic support.
- Instructors may have hidden biases that affect how they engage with or evaluate students from different backgrounds. These biases, whether conscious or unconscious, can lead to differential treatment, impacting students' confidence and performance.
- The lack of representation in faculty and tutoring staff means that many students do not see themselves reflected in those roles. This lack of diversity may also hinder culturally responsive teaching and reduce the effectiveness of mentoring relationships.
- Cultural communication gaps - There may be insufficient open communication or understanding of cultural differences, leading to misunderstandings or ineffective support for students from diverse backgrounds. Faculty and tutors may not be fully equipped to handle culturally diverse learning needs.

Addressing these factors would likely require systemic changes, such as increasing tutoring availability, providing professional development to address bias and improve cultural competence, hiring more diverse faculty and staff, and enhancing support systems for students facing external challenges.

How has this data shaped your comprehensive program review goals and action steps?

To address underlying biases and enhance communication about cultural differences, members of the Math Department, both part-time and full-time, participated in the Equity-Minded Teaching & Learning Institute during the 2018/2019, 2019/2020, and 2023/2024 academic years. Additionally, 17 faculty members attended the Acceleration Across California conference, which focused on equity.

Building on these experiences, the department continues to promote faculty involvement in EMTLI and other equity-minded professional development workshops. Faculty members share their insights with colleagues, contributing to curriculum revisions and changes in teaching practices aimed at reducing equity gaps. These efforts include developing more equity-minded syllabi, changing faculty perceptions of students, and fostering student-centered learning environments across all math courses. So far 30% of all math faculty have attended the EMTLI; to further support these efforts, we continue encouraging faculty and advertising to participate in EMTLI activities and other professional development opportunities centered on equity.

To mitigate student financial challenges, we are adopting low- or no-cost learning materials for our math courses. For instance, we provide calculators for use in and out of class through our department and the library, and we've developed many of our own learning materials for support courses, either offering them for free or at minimum cost through the bookstore. We are also utilizing Open Education Resources (OER) and reduced-cost textbooks for several classes and expanding our free and reduced-cost textbook program. We anticipate these initiatives will improve success and retention rates.

The department has also implemented a corequisite support model and eliminated the traditional "math pipeline of doom," which has created significant structural barriers to student success. These changes make our math curriculum more relevant and accessible. Despite these advances, we recognize that there are still barriers to student success that need addressing:

- Changing mindsets - We aim to shift the mindsets of faculty, classified staff, administrators, and students to promote a more inclusive and supportive educational environment.
- Supporting student hardships - We are collaborating with programs like Cuyamaca Cares, UPI, DSPS, EOPS, Umoja, and Puente to support students facing various hardships.
- Increasing diversity among staff - We are working to ensure that our departmental staff, faculty, and tutors better reflect the cultural diversity of our student body.

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Through these ongoing efforts, we are committed to creating a more equitable and supportive learning environment for all students

Discuss your department/discipline's plan for diversifying department faculty in alignment with the GCCCD Board Resolution 20-015.

The Math Department is committed to continuing to increase the diversity of our faculty. To do this, we have already started recruiting more diverse part-time faculty, which will help grow the pipeline. During the summer 2024, the department hired four new part-time faculty, all of whom were people of color. We need to reach out to communities to recruit potential full-time faculty that better represent our students.

Recent retirements and job changes have created three vacancies in the Math Department. In summer 2022, one full-time faculty member retired, and we have yet to receive a replacement hire. In addition, one full-time faculty member moved to a new position at the college as the Dean of MSE in July 2024. Lastly, another full-time member submitted retirement paperwork and will retire in June 2025. Down three full-time faculty within three years, the department is desperately in need of hiring more full-time faculty. As such, the Math Department has a valuable opportunity to enhance its faculty's diversity as we fill these positions. A diverse faculty helps the department to better reflect the diverse students and communities we serve.

If given the opportunity to hire a full-time faculty member, the department will recruit from listservs and other online platforms where diverse faculty are more represented. Such examples are through Umoja, PUENTE, SHPE (Society for Hispanic Professional Engineers), NSBE (National Society of Black Engineers), Lathisms (Mathematical community for Latinx and Hispanic professionals), P2P (Pipeline to Possibilities that helps to recruit and mentor HBCU grads) and NAM (National Association of Mathematicians).

In summary, by increasing the diversity of faculty, the department aims to create a more representative and inclusive environment. Eliminating educational opportunity gaps for students of color is critical to ensuring that all students, regardless of their background, have access to equitable learning experiences and outcomes. Bold action in this direction can involve recruitment, retention, and support strategies designed to foster a more inclusive and supportive educational environment for everyone.

What other qualitative or quantitative data, if any, is the department/discipline using to inform its planning for this comprehensive program review?

The Math Department places a strong emphasis on data to drive our decisions and remains deeply committed to data-informed, evidence-based practices. We continuously gather and analyze information from a wide range of sources, including SLO (Student Learning Outcomes) and PLO (Program Learning Outcomes) data, student achievement metrics, equity-minded teaching and learning data, and custom data requests facilitated through Institutional Research. This allows us to fine-tune our approach and ensure we are meeting the diverse needs of our students.

In July 2024, we received a comprehensive data report that was initiated from one of our ad-hoc research inquiries. The report yielded surprising and impactful insights. Specifically, it showed that students who did not take Precalculus in high school and went on to successfully complete Calculus I outperformed their peers who took Precalculus or Precalculus with support at our college. Even more compelling, students who skipped high school Precalculus and enrolled directly in Calculus I with support showed success rates that tripled in half the time compared to those who took Precalculus at the college level. This data highlights the critical role that support structures, such as increased contact time with instructors and tailored instructional support, play in student success. The findings suggest that the Calculus I with support model not only accelerates progress but also substantially enhances learning outcomes, particularly for students without a traditional Precalculus background.

Moreover, further analysis revealed that students required to enroll in the Calculus I with support course in fall 2023 achieved an impressive 71% success rate. This is notably higher than the success rates of two other groups: those who took Calculus I and chose support as an option, and those who enrolled in the stand-alone Calculus I course, both of which had success rates of 50%. This significant difference underscores the importance of mandated support, as students seem to thrive when they are given structured opportunities to engage more deeply with the material and with their instructors.

Looking ahead, we are more committed than ever to leveraging this data to inform our curriculum and scheduling decisions. We plan to expand our offerings of Calculus I with support and reevaluate the role of

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Precalculus in the pathway to higher-level math, all with the goal of improving student outcomes and ensuring equitable access to success in STEM fields.

Building on this information, along with our combined years of experience teaching Calculus, we observed that students who were placed in Precalculus with support or Precalculus tended to be less prepared than their peers who had not taken Precalculus in high school when it came to successfully completing Calculus I with support on their first try. These success rates could potentially be linked to the development of a set of Canvas Prep modules specifically designed to help students, aimed at reviewing the algebra skills required for students enrolling in Calculus I, with or without support, to strengthen the mathematical foundations needed for success in the course and boost students' confidence and performance. By ensuring that all students have access to these resources, we aim to level the playing field and improve overall outcomes in the course, regardless of their initial placement. Moving forward, the Math Department will create Canvas Prep modules for the other math classes such as Calculus II, Calculus III, and Differential Equations.

Another concerning aspect in the data reveals that African American student enrollment in advanced math courses at Cuyamaca is significantly lower than their overall representation at the college. This disparity raises concerns about equity and access in STEM education. To better understand the root causes of this issue, further research is needed, examining factors such as systemic barriers, academic preparation, and the availability of support services. In response, we could consider partnerships with programs like the Umoja Community, which focuses on supporting African American students, and outreach initiatives with local high schools to inspire and prepare these students for pursuing degrees in STEM fields. Additionally, creating mentorship opportunities, improving access to tutoring and academic resources, and fostering a more inclusive classroom environment might help bridge this gap and encourage greater participation in higher-level math courses.

One potential step the department could take is to form focus groups made up of both students who struggled and those who succeeded in their Math Pathways courses. The purpose would be to gather insights into their experiences, which can be used to enhance the program and boost student success and completion rates. Additionally, we regularly receive feedback from tutoring services regarding how students are engaging with their resources. This information helps the department collaborate with Tutoring to determine the most effective ways to support our students.

Although we currently use a pathways model to recommend the one or two most suitable math courses for students, this approach requires continuous improvements. It's important to collaborate with other disciplines to better identify the most appropriate math course for each major and update the decision tree accordingly.

Distance Education Course Success (If Applicable)

If your department offers distance education classes, how do you ensure Regular and Substantive Interaction (RSI) is being implemented?

Regular and effective contact hours are ensured by following the Cuyamaca College distance education policies that are currently in place and to meet Accreditation Standards Criteria and Federal Regulations. The approaches listed below improve educational quality and learning outcomes for students and foster a sense of community and belonging. Some examples that are utilized by math faculty include but are not limited to the following.

- We provide an online orientation module in each course with an affective domain exercise to help students prepare for online learning. This can really help set the tone for success and ensure they feel equipped to handle the format.
- Our syllabi include clear guidelines outlining each instructor's communication policy, specifying the methods used (such as Canvas messaging, email, personal phone, etc.) and the expected response time for students.
- Instructors administer a syllabus quiz at the end of the orientation during the first week of class. This enables them to intervene if a student is not actively participating during that critical first week of the online course.

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- In the rare occurrence that an online teacher will not be responsive to students in their online class for a short period of time due to an emergency or illness, the faculty member notifies the students using the announcement feature on Canvas. Students are informed as to how long the teacher will be unavailable and when contact will resume as well as who to contact in the meantime if a need arises. The faculty members also notify the dean and department chairs.
- The *Interactive Math on Canvas* materials feature substantial and authentic group discussion board assignments that serve both summative and formative purposes. These assignments require students to give meaningful and constructive feedback to one another, while allowing instructors to step in with encouragement and just-in-time review as the project progresses. Additionally, students are encouraged to revise their work based on feedback from peers and instructors. When grading, instructors provide timely and individualized feedback on assignments. Throughout the course, instructors use various messaging methods to reach out to students who are falling behind on assignments or need additional support. One example is the gradebook messaging feature in Canvas, which allows instructors to send messages to students who have not submitted an assignment or received a low score.
- Posting weekly announcements to remind students of upcoming due dates.
- Sending follow-up emails both encourage students who stay on track and assist those who have fallen behind.
- Using the Canvas feature “New Analytics – Communication,” which tracks consistent instructor-student contact throughout the semester. Instructors use this tool to remind students of late assignments and offer help with extensions.
- Delivering online lectures or instructional materials.
- Engaging in one-on-one emails with students
- Assigning peer-reviewed tasks.
- Conducting guided study sessions to review key concepts before exams.

If there are differences in success rates for distance education (online) versus in-person classes, what will the program do to address these disparities? If there are no differences, what did the program do to achieve that?

The table below shows data during the 2019 – 2023 fall semesters and during the 2020 – 2024 spring semesters for math courses offered with different modalities. The table provides the success rate for students who are taking classes face-to-face/on campus, students who are taking classes 100% online.

Fall semesters	On Campus	100% Online
Fall 2019 – Fall 2023	72% - 74% - 72% - 72% - 74%	62% - 68% - 58% - 67% - 66%
Success rate /Average	73%	65%

Spring semesters	On-Campus	100% Online
Spring 2020 – Spring 2024	76% - 78% - 74% - 77% - 79%	72% - 77% - 68% - 68% - 75%
Success rate/Average	77%	71%

This table shows data for math courses with different modalities

The Math Department is offering multiple classes such as Statistics, Statistics with support, Precalculus, Business Calculus, Calculus I, Discrete Math, and Calculus II that are 100% online. Within the last few years, students enrolled in these online math classes were less likely to successfully complete the courses than students enrolled in the equivalent face-to-face courses. Although the gap continues to narrow from year to year, it still exists.

We see that the on-campus classes have a higher success rate than the online classes. The data shows that the student success rate has increased from fall 2019 to spring 2024 for the on-campus courses while it has increased slightly for the 100% online classes. We are attributing this small success to multiple factors. Faculty reaching out to students during the first two weeks of the semester and providing them with resources and interventions, faculty are being flexible with assignment modalities and deadlines, and faculty using different grading methods and measures. Additionally, last year, an online CoP group was established where faculty who teach online classes would meet to address these disparities. This helped to narrow equity gaps a little. Our CoP groups will continue to meet regularly to modify the courses and investigate ways to improve their teaching and learning to increase the success rate for students.

Another factor that contributes to these small increases in success rates is developing the zero-text-cost courses, ZTC that are free to our students on the first day of the semester. We anticipate that the adoption of these learning materials in the 100% online version of these math courses coupled with a more equity-minded approach to teaching math online will close the gap between the online and face-to-face success and retention rates. In addition, the department will refocus our efforts to improve retention in our online classes as well as face-to-face. If we can help more students stay up to date with the material, this should lead to an increase in retention which ultimately will lead to an increase in success rates.

We also adopted another intervention aimed at improving retention and success rates in our short-term online Statistics classes. These short-term classes are now offered in a 12-week and 14-week format as opposed to 8-weeks. The fast pace of an 8-week course tends to hinder student success and retention. An 8-week course does not allow time for students to catch up if they fall behind. Furthermore, we stagger the start dates of our 12-week, 14-week online sections to allow students who need to 'start over' the opportunity to start fresh in another section. We anticipate this strategy will increase success and help close those equity gaps.

Our Math Department can take several steps to address the disparities between the face-to-face and 100% online classes:

- Increase student support services such as offering additional tutoring, one-on-one virtual office hours, and supplemental instruction specific to online courses. There may also be expanded access to counseling, advice, and tech support for online students.
- Enhance faculty training - faculty teaching online could be provided with advanced professional development in online pedagogy, focusing on engaging students virtually and promoting equitable outcomes.
- Continuing to improve course design: Online courses are being redesigned to be more interactive, using multimedia resources, discussion boards, and other engagement tools to replicate in-person experiences. Ensuring alignment between course content, assessment, and engagement tools is key.

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- The department may identify barriers to success, such as limited access to reliable technology or the internet. Solutions could include providing students with loaner devices or access to software and internet subsidies.
- Online course “Analytics” might be used to track student engagement and participation. Early alerts and interventions could help flag students struggling with the online format so that they can receive support early on.
- Math professors strive to make themselves available to assist students; they are not only offering students hours (aka office hours) in person, but they are offering student hours in Zoom to accommodate those students who cannot attend in person. This endeavor ensures increased student access to professors and helps them be successful.
- Develop assignments that convey “instructor’s presence” and “care” such as “Getting to Know you” Surveys. Instructor presence in an online class is crucial; students often feel their learning suffers when instructors are absent. Negative online learning experiences are frequently attributed to instructors being perceived as “invisible,” which can lead to students feeling undervalued and less likely to approach them, seek help, or ask questions.

The program will continue to monitor outcomes and make data-informed adjustments to maintain equitable results across all formats.

Career Exploration and Program Demand (Career Education Programs Only)

Please share your observations about the employment rate for your program over the last 4 years.

N/A

What is the institution-set standard for your program’s employment rate?

N/A

What would you like your program’s employment rate to be, ideally (stretch goal)?

N/A

What do the latest labor market data reveal about the careers (including those for transfer students) for which your program prepares students?

N/A

Strengths, Challenges & External Influences

Please describe your program's strengths.

- We embrace a forward-thinking approach, guided by our motto “fly the plane while we build it.” We’re not afraid to take risks or challenge the status quo if it benefits our students.
- In our meetings, the discussion consistently returns to how we can most effectively support students. Our priority is student success, focusing on meeting them where they are rather than where we assume they should be.
- We are data driven. We regularly review our own course and department retention and success data, with an eye towards equity and continuous improvement.
- Our department collaborates effectively to address challenges and generate innovative solutions.

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- We maintain strong relationships with other disciplines, enabling us to align our curriculum to better support students in those fields.
- Additionally, we work closely with student services to ensure students receive accurate guidance for their educational goals.
- Through the Math Pathways program, we've simplified the process for students to meet their math requirements. This includes streamlining the assessment process, implementing a corequisite model that helps students finish their classes more quickly, and eliminating exit points to keep students on track for completion.
- We actively include our part-time faculty by encouraging their participation in department meetings, seeking their input on departmental decisions.
- We are faculty who commit to continuous improvement through participation in monthly Community of Practice (CuyaMATHa COP) meetings. Faculty meet regularly to discuss the best teaching practices, affective domain activities, and our new teaching philosophies. We make efforts to ensure they receive fair compensation for their work.
- We reduce costs for students with the development of "*Interactive Math on Canvas*" ZTC Textbooks for many of our courses, with a plan to make our entire degree pathway ZTC.
- We work toward reducing equity gaps; most faculty have taken EMTLI and/or Humanizing STEM Academy. As part of our ongoing efforts to eliminate equity gaps, 30% of all math faculty completed the Equity-Minded Teaching and Learning Institute (EMTLI), 30% completed the @ONE Humanizing STEM Online course, and 22% completed the @ONE Equitable Grading Strategies course. In the future, we aim to further increase these participation rates as we continue to advance equity initiatives.

Please describe your program's challenges.

- **Insufficient funding:** The success of Math Pathways heavily relies on our Community of Practice, where we regularly discuss effective teaching methods, affective domain activities, and new teaching philosophies. However, the current grant barely covers the costs for our Community of Practice meetings and the development of *Interactive Math Textbooks on Canvas* for Math 280. Consequently, we have had to scale back our Community of Practice, even though our goal is to expand it to include all math courses.
- **Shortage of full-time faculty:** Developing and implementing the Math Pathways program has been a significant effort, consuming our focus for the past seven years. We continually seek innovative ideas to enhance students' experiences and increase their chances of achieving educational goals. However, with all available full-time faculty (and some outstanding part-time faculty) fully engaged in Math Pathways, we have been unable to pursue these new ideas.
- **Lack of diversity amongst faculty** (faculty are not representative of our student body) The lack of diversity among faculty, can have several effects such as:
 1. decreased representation – students may feel less represented and may struggle to relate to faculty who do not share similar backgrounds.
 2. Reduced engagement – a lack of diversity can lead to decreased engagement and participation from students who may not see themselves reflected in their instructors or the curriculum.

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3. impact on student success and bias and inclusivity issues.

- Academic dishonesty post Covid is increasing because of the use of Artificial Intelligence (AI), ChatGPT, and other tools. With the new advances of AI Tools, we are afraid that students will rely heavily on AI which will contribute to decrease in their critical thinking skills, writing skills, and their full understanding of the concepts.

Please describe external influences that affect your program (both positively and negatively).

- **Funding:** Insufficient funding has several adverse effects on our program. We've had to reduce the frequency of our Community of Practice meetings. A shortage of full-time faculty restricts our capacity to introduce innovative strategies for enhancing student success and addressing equity gaps. Additionally, the lack of weekend and limited evening tutoring options prevents many students from accessing this crucial support service. Finally, we need to apply for funds to continue developing ZTC or reduced cost textbooks/ curriculum development
- **Cuyamaca Cares:** Many of our students face food and/or housing insecurity, which affects their focus and performance in their studies. The Cuyamaca Cares campaign, along with its incredible partnership with the San Diego Food Bank and Project Room Key, has been instrumental in providing essential resources to those students in need.
- **Budget (Faculty Hiring):** As noted earlier, we are down 3 full-time faculty members in the last three years. Hiring a full-time faculty who will assume responsibility and help the math department with its endeavors would be very supportive. However, if a delay occurs, this might impact the development of zero-cost materials for students and other related projects.
- **Aligning with Grossmont College's Math Department:** Agreeing on access and placement policies across the colleges is sometimes challenging.
- **AB1111 – Common Course Numbering Project.** In the coming semesters, Course Outlines of Record for almost all math courses will need to be updated, aligned with Grossmont, and ensured that articulation is maintained. This is a larger endeavor that will require collegewide support.
- **AB1705 –** In coming semesters, the math department will most likely no longer offer Precalculus due to changes to placement outlined in AB1705. The department will need to find ways to support STEM students in their math and science courses who have never taken Precalculus.
- **STEM Tutoring –** students who attend tutoring do better in their courses, the data shows this. However, STEM tutoring is often unable to meet the needs of our students due to major budget restrictions.

Given these factors, what opportunities exist for the service area to advance the College's goals in the next 4 years?

The college is focused on expanding equitable access, closing equity gaps, and increasing the hiring and retention of diverse faculty members. As we look to the future, there are numerous opportunities to strengthen student success and advance equity. A key component of this effort is the ongoing development and refinement of our Math Pathways program, which is designed to create more inclusive and supportive learning experiences for all students.

Several specific initiatives outlined in this document highlight our commitment to continuous improvement. One such initiative is offering targeted support for students who have not taken Precalculus, enabling them to enroll in Calculus I with additional resources to ensure their success.

Comprehensive Program Review

For students progressing from Calculus I to Calculus II, we are developing prep modules that provide essential content review and reinforcement to help them excel in higher-level coursework. Similarly, we will develop prep modules for students enrolled in Calculus III and Differential Equations when we write the *Interactive Math on Canvas* Textbooks.

Beyond course support, we also recognize the importance of clear and effective communication. We are working to enhance the messaging students receive, both before and after placement, ensuring that they understand their options and are guided toward the most appropriate pathways for their academic goals. This will be done in collaboration with other disciplines to offer a more integrated approach, helping students develop the skills necessary to tackle challenges in their future courses. Additionally, we are committed to reducing financial barriers for students by developing zero-cost textbooks for all remaining upper-division math courses. By removing the burden of expensive materials, we aim to create a more equitable learning environment where all students have access to the resources they need to succeed.

Lastly, these efforts are part of our broader mission to create a more inclusive and equitable educational environment, one that not only supports academic achievement but also fosters a sense of belonging and empowerment for students from all backgrounds. By continuously evaluating and adjusting our programs, we are laying the groundwork for a future in which every student can thrive.

Program Goals

Program Goals Status

I have updated the progress on my previous goals.

Program Goals Mapping

Mapping for all active Program Goals complete.

Submission
