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COMPLETE

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Page 1: I. Program Overview and Update

**Q1**

I.1. Department(s) Reviewed:

Mathematics

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**Q2**

I.2. Lead Author:

Lamia Raffo, Chris Navo, Tammi Marshall

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**Q3**

I.3. Collaborator(s) - list of any person that participated in the preparation of this report:

Annalinda Arroyo, Dan Curtis, Scott Eckert, Bryan Elliott, Terrie Nichols, Rachel Polakoski

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**Q4**

I.4. Dean/Manager(s):

Kim Dudzik

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**Q5**

Initial Collaboration Date with Manager/Dean:

Enter the initial date you met **10/20/2021**  
with your dean to discuss  
your program review using  
this format: MM/DD/YYYY

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**Q6**

I.5. Program Update (Required): Please summarize the changes, additions, and achievements that have occurred in your program since your last program review was submitted. To access your Spring 2021 program review, visit the Program Review webpage.

Since our last Comprehensive Program Review, our Math Department had the following changes, additions, and achievements.

Changes/Additions:

- The Math Department developed Math 121 course (Quantitative Reasoning for Career Education) which is a mathematics course designed to advance the computational skills needed in Career Education (CE) programs. We are planning to offer one section of this course for the first-time during spring of 2022.
- Our Math Department is now offering more sections of Math 120 (Quantitative Reasoning). This is another transfer-level math class designed for non-BSTEM majors.
- Due to Covid-19, we are offering more Hybrid and DE courses to substitute the f-2-f classes. We learned that we were able to attract students who could not make it to classes on campus and those who do not learn well or like the asynchronous classes. Many students find it difficult to take f-2-f classes due to many reasons such as family obligations, their preferred learning style, and work.
- Our Math Department is more involved with the HSI STEM Grant this year. The work is to write instructional materials for Math 176 and Math 180 that are equity minded. The Math 176 materials will be completed in fall 2021 for a spring 2022 pilot and the Math 180 materials will be developed in spring 2022 for a pilot in fall 2022.
- Another area of the HSI STEM grant includes having an Embedded Learning Assistant in some sections of Math 176 and Math 180. The embedded learning assistant will be a student who has completed these courses and been involved in the grant. The student will attend those classes and then hold a meeting for an hour outside of class to help students in that specific course. These students will also be tutors.

Achievements:

- A faculty member from our department, Terrie Nichols, was on sabbatical during spring of 2021. Integrating equity-minded curriculum and redesigning course materials for Math 160 was her focus. Participation in Cuyamaca's Equity-Minded Teaching and Learning Institute (EMTLI) facilitated our reimagining of the Elementary Statistics course (Math 160). In our redesigned curriculum, students engage in culturally relevant and culturally responsive activities that foster a genuinely engaging and validating learning experience. Our redesigned statistics course is grounded in equity-minded teaching approaches which go far beyond simple surface changes such as using ethnic names or pointing to the "Hidden Figures" women as non-traditional mathematicians. Additionally, all aspects of Math 160 (from our course policies to effective and regular contact) are designed to support learning and student success – especially for historically marginalized student populations.

Here are some of the equity-minded teachings and learning practices and policies in our reimagined Math 160 course.

1. Prepared six IAT (Implicit Association Test) population datafiles with hundreds of thousands of records in each datafile in the following areas (Race, Weapons, Sexuality, Gender-Science, Gender-Career, Weight, and Disability). Our Math 160 students, and Stats students throughout the state work through an activity to help them select the IAT population that they are most interested in analyzing throughout the term. Then they access their datafile in Cuyamaca College Stats Group in StatCrunch (which Terrie set up) and obtain their own unique random sample to work with throughout the semester.
2. Terrie wrote module-level peer-reviewed activities and Unit-level peer-reviewed projects where students analyze their own unique random IAT samples. The Unit Projects replace traditional exams. Additionally, in many of the module-level peer-reviewed assignments and several of the Unit Projects, students choose the variables they want to study from their IAT sample.
3. Additionally, early in the course, students engage in multilayered activities where they learn about the many different career fields where statisticians work. They choose a field that most interests them, and then they profile a statistician in that field. Throughout the remainder of the semester, the students' profiles are shared at the beginning of each module where real-life, multi-racial and multi-ethnic statisticians are highlighted. As a result, students can see themselves in the course and in the fields that involve Statistics.
4. As previously mentioned, the course no longer includes high pressure and high stakes exams. Traditional exams were replaced with peer-reviewed unit projects.
5. All module-level assignments and the unit projects include: a first draft submission, a peer review, a self-evaluation, and a final draft submission.
6. All class policies from attendance to late work to communication to grading have been humanized and are intended to

communicate that the instructor's main purpose is to support each student's success.

- One of our math faculty, Dan Curtis, was on Sabbatical leave during spring 2021. He was involved in creating and developing online educational materials intended to support students in MATH 180. The primary reason why students struggle in Calculus is because of deficiencies in prerequisite algebra and trigonometry skills. Without having access to high-quality, on-demand support outside the classroom, many students struggle. By creating Canvas modules that include pre- and post-assessments, practice problems, and instructor videos directly aimed at the necessary relevant math skills and presenting them to students in a just-in-time approach, students will have access to the support they need outside the classroom. These modules do not take the place of in-class instruction but supplement it by providing students with assistance in areas that they may be lacking prerequisite skills that are impractical to cover in sufficient depth inside the classroom.
- Terrie's Math 160 online class has been approved as a Peer Online Course Review (POCR) class.
- Many of our Math faculty have participated and completed the EMTLI to be more equity-minded and to support our students in their educational journey, and a few other faculty have enrolled this semester.
- Our Math Department Chair, Tammi Marshall, was asked by The Center for Analysis of Postsecondary Readiness (CAPR) to write a blog titled, Students are Ready. We Need to Recognize It. She speaks in this blog about the use of alternative (aka multiple) measures to place students into math, and data shows more students are able to complete their math within their first year of college, a momentum point that increases a student's chance of graduating.
- In the summer of 2021, math faculty member Rachel Polakoski, created and facilitated the following workshop that provided professional development to community college math faculty across the state of California: Alternative Assessments in Mathematics. USC's Racial Equity in Mathematics Leadership Institute (REIMLI), June 2021. Presented alternative assessments to the traditional timed assessments as a matter of equity in assessments in mathematics. In addition, we had some faculty who attend the REIMLI series over the summer as well.

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### Page 2: II. Assessment and Student Achievement

#### Q7

II.A.1. Describe the progress your program has made in your 4-year assessment cycle. Include any assessment results your department has found and changes you have made as a result. If your assessment plan has changed, please upload this new plan as well.

This year we are starting our new 4-year assessment cycle. The Math Department has developed a new assessment plan for fall 2021 to spring 2025. Our SLO assessments are up to date and have been assessed as part of the previous 4-year assessment cycle. The Math Department continues to assess student learning outcomes and analyze the results on a regular basis. Evidence-based decisions made by department members relies very much on this data to improve our courses, pedagogical practices, and programs. The Math Department has embraced equity-mindedness, and thus, is continuously making changes and revisions to better support students' learning and to obtain good outcomes. Because of this, we have not assessed any SLO since fall 2019 as we needed to make some changes and improvements by integrating equity-minded ideas to the assessment process.

In addition, we updated our Program Level Outcomes, PLOs to be in alignment with other STEM programs and will begin assessing these next year.

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#### Q8

OPTIONAL: You may upload a copy of your SLO assessment plan here. If you have an Excel sheet, please convert it to one of the supported files listed below before submission.

**Math SLO Tracking FA 2021 thru SP 2025.pdf (74.1KB)**

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### Page 3: II. Assessment and Student Achievement

## Q9

II.B.1. What progress has been made in your program to address the institutional goals set around student success and equity? {2019 Equity Plan} If qualitative or quantitative data is available, please summarize any findings.

Since the Math Department started implementing Math Pathways, our goal was to eliminate the achievement gap. Our main potential area of progress has been closing the equity gap regarding access for our Latinx students. Using the data provided by IESE and the equity index, which more accurately looks at equity since it compares disaggregated groups within themselves rather than to another group. This ensures we are not saying students of color should be just like the 'White' students. Instead, we can compare their enrollment, retention, and success with their overall enrollment at the college. An index of 1.0 is considered at equity or parity, whereas below 1.0 is underrepresented and above 1.0 is overrepresented.

Looking at the data given and the fall 2020 equity index values below for each disaggregated group, we can more accurately see where our department is succeeding and where we need to continue working.

Our students who identify as Latinx are just about at parity with respect to enrollment in math with an index of 0.97. Unfortunately, the same cannot be said for our students who identify as Black/African American with an index of 0.92 or for our female students with an equity index of 0.88. Our students who identify as Middle Eastern or North African however are overrepresented with an index of 1.18.

Additionally, a significant disparity exists in our retention rates and success rates for our Latinx, Black/African American, and female students. Clearly, a priority needs to be helping our students who identify as Black/African American. Our Latinx students are almost at parity for retention, but not success. Our students who identify as Middle Eastern or North African are doing great which is incredible! In addition, work needs to continue with our female students as well.

The data is in order Enrollment; Retention; Success

African American/Black ... 0.92; 0.72; 0.64

American Indian/Alaska Native ... 0.54; 0.53; 0.42

Asian ... 0.90; 0.91; 0.97

Latinx ... 0.97; 0.94; 0.84

Middle Eastern/North African ... 1.18; 1.27; 1.42

Pacific Islander ... 0.75; 0.58; 0.34

White ... 1.03; 1.08; 1.15

Multiple Races ... 0.99; 0.93; 0.92

Unknown ... 0.70; 0.66; 0.66

Female ... 0.88; 0.89; 0.90

One thing to keep in mind is that the grade of EW (excused withdrawal) was included as a non-success in fall 2020 and with the COVID pandemic, we know there has been disproportionate impact among students of color. However, it is important to look at this data to see where the Math Department is succeeding and where we still have work to do.

The Math Department is continuously working to support students of color in multiple ways to increase their retention and success rates as well as accelerate their graduation. A few of our math faculty participated and completed the Cuyamaca college's 2020/2021 EMTLI cohort. The knowledge learned and the experiences gained from this cohort will be shared within the department to redesign curriculum in some of our courses. Engaging students in culturally relevant and culturally responsive activities that foster a genuinely engaging and validating learning experience is the primary goal for our department to close the achievement gap.

**Q10**

II.B.2. In light of the goals set in your program review, what are your plans to improve equitable student outcomes (success, retention, persistence, graduation, etc.) in the coming year?

The Math Department continues reviewing data and apply practices of culturally responsive teaching to close equity gaps. To address hidden biases, promote open communication about cultural differences, and to raise faculty awareness about racism, a few of our math faculty participated and completed the Cuyamaca college's 2020/2021 EMTLI cohort. This cohort has tremendously transformed and helped them become more equity-minded teachers. Through this cohort, instructor-level data, and college-level data are provided to faculty to help them identify which groups of students are disproportionately impacted and to help them develop culturally relevant content and build good learning experiences for students based on what those faculty learned. Our math faculty are constantly researching, sharing, applying strategies, and developing equitable teaching practices that are designed to address equity gaps within our classrooms and to foster culturally responsive teaching to optimize learning.

A few examples of becoming more equity-minded teachers include – making the syllabus more welcoming and equitable, facilitating and incorporating a more student-centered learning environment in all our math classrooms, and changing faculty mindset. We will continue to encourage faculty to attend the EMTLI workshops and other professional development workshops that focus on equity. In fact, a few more math faculty, PT and FT, have enrolled in the EMTLI cohort for the year of 2021/2022. Hopefully, this new knowledge gained will be shared with department members to support students and fortify students' success.

To help reduce students' financial difficulties, we are adopting low to no-cost learning materials in math courses and plan to keep course costs low overall. For example, we have developed many of our own learning materials for our support courses. This allows us to offer the materials free to our students. In addition, we are using Open Education Resources (OER) textbooks or reduced cost textbooks for several of our courses. For our other courses, we are expanding our free and reduced cost textbook program as part of our ongoing efforts to reduce overall course costs. Students now have access to the appropriate learning materials on day one and pay less since the purchase of required textbooks for several math courses is included through their registration fees. We expect this to increase students' success and retention rates. Moreover, one of our math faculty finished redesigning the Math 160 course materials by integrating more equity-minded models and activities. Our department is now working on integrating similar ideas and work into Math 176 and Math 180 during fall 2021 and spring 2022. Along with the previous strategies, we have a supply of calculators that students may check out from the library and use during the entire semester to reduce their financial barriers.

To better serve students in our program and to improve their success and retention, we embrace an equity-minded framework. Our plan is to implement equity-minded changes within each of our courses by adjusting our instructional methods, redesigning materials to be culturally diverse, reaching out to students, providing early interventions, and modifying submission policies. As a result, we are hopeful this will enhance students' success.

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**Q11**

II.B.3. What did your program learn from the transition to remote teaching and operations over the past year? How can this be used to improve the student experience in the future?

Transitioning to remote teaching was accompanied by many difficulties and challenges. Students were not alone in the problems they faced with their classes. Faculty, staff, and administrators had many obstacles with this transition as well. Many students were facing many challenges due to the pandemic such as financial hardships, family obligations, job losses, health issues, and the environment where they live not allowing them to study productively.

Our college believes in the saying, "it takes a village to raise a child;" and thus, we believe it takes a village to achieve any meaningful change. Hence, with hard work, collaboration, and determination from faculty, staff, and administrators we were able to transition to remote teaching since the middle of spring 2020.

During this time, we realized we were able to attract students who could not make it to classes on campus and those who do not learn well or like asynchronous classes. Many students find it difficult to take f-2-f classes because of family obligations, taking care of their children, work, living too far away, or their preferred learning style. Offering remote synchronous classes gives students who never had an opportunity to take classes earn an education.

In addition, we learned that we can improve the students' experience by reaching out to those who do not show up or have stopped being active in class early on. Communicating with students through email or canvas and offering support goes a long way in helping students stay in class and be successful. Some examples of support include providing college resources such as Cuyamaca Cares, counseling, UMOJA, and tutoring services as well as giving students extra time on assignments.

**Q12**

No

II.B.4. Is your program a career education program (e.g., does it prepare students to directly enter the workforce)?

Page 4: II. Assessment and Student Achievement continued

**Q13**

Respondent skipped this question

II.B.5. Please share your observations about the employment rate for your program over the past several years.

**Q14**

Respondent skipped this question

II.B.6. What is the institution-set standard for your program's employment rate? The institution set standard is what you would consider the lowest acceptable employment rate for your program (or "floor").

**Q15**

Respondent skipped this question

II.B.7. What would you like your program's employment rate to be, ideally (stretch goal)?

Page 5: II. Assessment and Student Achievement continued

**Q16**

Yes

Does your department offer classes that are approved distance education courses excluding emergency remote teaching in 2020-21 (classes that would have been taught in person if not for the pandemic)?

## Page 6: II. Assessment and Student Achievement

**Q17**

II.C.1. If there were differences in success rates for distance education (online) versus in-person sections of program courses in your last comprehensive program review, what has the department done to address these disparities? If online and in-person sections had comparable success rates, please describe what the program did to achieve that.

In our comprehensive program review, data showed that we had a 13-percentage point gap in success rates between our online students and in-person students; however, we saw a slight improvement over the last 5 years. Math 160 (Elementary Statistics) is currently the only math course offered 100% online. In each of the last 5 years, students enrolled in an online Math 160 class were less likely to successfully complete the course than students enrolled in the equivalent face-to-face course. The gap has narrowed from year to year and decreased to 5.4 percentage points in the 2019/2020 academic year.

Unfortunately, equity gaps persist in our online classes. The success equity index for Black/African American students 0.61 and for Latinx students is 0.74. Much more needs to be done to help our students of color succeed in online classes.

To help further close existing gaps, our online MATH 160 classes now use our Interactive Statistics on Canvas learning materials in lieu of a traditional textbook. This interactive online textbook was developed by Cuyamaca's math faculty and is offered free to students. Interactive Statistics on Canvas provide students with a more conceptual understanding of the material and helps them stay focused and on task as they study Statistics in smaller chunks. We anticipate that the adoption of these learning materials in the 100% online version of Math 160 coupled with a more equity-minded approach to teaching statistics 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.

These short-term classes are now offered in a 12-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 began staggering the start dates of our 12-week online sections to allow students who need to 'start over' the opportunity to start fresh in another section. It is too soon to tell since both strategies were implemented in fall 2020, but we are hopeful they will increase success and help close equity gaps.

## Page 7: III. Previous Goals: Update

**Q18**

## 1. Previous Goal 1:

Assess, revise as needed, and continue to improve the Math Pathways program

**Q19**

**Basic Skills Acceleration**

2. Which College Strategic Goal does this department goal most directly support? (Check only one)

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**Q20**

**In Progress - will carry this goal forward into next year**

3. Goal Status

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Page 8: III. Previous Goals: Update continued

**Q21**

**Respondent skipped this question**

Please describe the results or explain the reason for deletion/completion of the goal:

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**Q22**

**Respondent skipped this question**

Do you have another goal to update?

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Page 9: III. Previous Goals: Update continued



**Q23**

Action Steps for the Next Year: If you are requesting resources in order to achieve this goal, please list them below as action steps and specify the type of request (e.g., submit technology request for new laptop computers).

a. Community of Practice and teacher mentoring programs

Since a considerable percentage of our courses are taught by part-time instructors, the Community of Practice (COP) and Teacher Mentoring programs we have developed have been essential to the success of the Math Pathways program. As part of these programs, we regularly meet to discuss best teaching practices, such as just-in-time remediation, student-centered classrooms, student engagement, productive struggle, and faculty & student mindset. We also develop assignments to address students' affective needs and internal struggles or fears such as affective domain and math interlude assignments. We work on creating culturally relevant teaching materials and develop techniques for using equity-minded practices in the classroom. We are continually in the process of developing new instructional materials, classroom activities and assessments, and online assignments in the support of these practices. We will continue to implement these programs, provided we have the funding required to sustain them. We will be exploring grant opportunities that will allow us to continue with these programs and even expand them to all our courses. We will be developing a guide for how we will do this once funding is available.

b. Collaboration with Tutoring to train tutors for Math Pathways courses

The Math Department collaborates with Tutoring to train tutors so they can better help students in the Math Pathways program. Due to the innovative teaching methodology, tutors need specialized training for these classes. In spring 2020, we received funding for three tutors to participate in this training by having them attend the classes to see what the students are learning, how it's being taught, and brush the tutors up on some of the harder topics taught in the course(s). We plan to continue and hopefully expand this practice to include the calculus sequence, provided tutoring has the funding available to continue with the training.

In addition, the tutoring budget cuts continue to hit hard. Students need to be able to get help and it needs to be made available at many hours during the week. We would like to see additional tutors during the day as well as have tutoring open until 8:00 pm four nights of the week (instead of just two nights). Also, because of the need to meet students where they are, we feel it is important tutoring be available on weekends since this is when many students have the time available to dedicate to their studies. But this takes money and tutoring often finds itself relying on soft money rather than having enough in the general fund. We would like to see the college increase the general funds given to Tutoring.

c. Integration of equity-minded practices into the Math Pathways program

Over the last few years, many members of the Math Department (part-time and full-time) have participated in the year-long Equity-minded Teaching & Learning Institute (and its predecessor). The Math Department also has a strong presence with the Umoja Community program at both Cuyamaca and Grossmont. To continue and expand these relationships the Math Department meets regularly with the members in both programs to discuss best teaching practices, course content coverage, student validation and engagement, community building amongst the students and between the students and faculty & staff. As a result, our tight-knit community better serves our disproportionately impacted students as it can quickly identify and intervene on the behalf of a struggling student providing them with the appropriate resources and guidance to keep that student on their path. Applying what we learned, we plan to redesign our instructional materials to better serve our diverse group of students. In spring 2021, we started updating our MATH 160 materials to make them more equity-minded and culturally relevant, intended to broaden students' worldview. We finished updating all the material and the course got approved to get a POQR badge. We will develop interactive instructional materials and activities for Math 176 in fall 2021 and for Math 180 in spring 2022 and integrate equitable teaching practices into these courses through an equity-based lens. We currently offer an Umoja Community MATH 160 course. Along with this equity-minded course redesign, we plan to develop criteria for addressing the equity gaps in instructors' teaching and learning practices. We have created example syllabi that are more equity-minded and have conducted workshops to share them with instructors within the Math Department.

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

Ever since the launch of the Math Pathways program five years ago (as well as our preceding acceleration program with MATH 096), the Math Department has relied heavily on a wide variety of data to inform revisions to the program. This has allowed us to identify where we were losing students and patch these holes in the leaky pipeline. The data also allowed us to recognize the biased nature of our previous placement policy and its adverse impact on disproportionately impacted students. This led to a significant change in how

students are placed into classes and a significant decrease in equity gaps. Early in fall 2020, we received an extensive report from Instructional Comprehensive Program Review Spring 2021 19 / 24 Institutional Research titled "Cuyamaca Math Pathways Outcomes with an Equity Lens." This report includes student data from Math Pathway courses, as well as subsequent courses in math and other disciplines. The data in this report is allowing us to assess the Math Pathways program, both in removing equity gaps and in how well the program prepares students for courses later in their academic pathway. The Math Department will continue 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 Institutional Research.

e. Assistance for math faculty transitioning to online or ERT courses.

With the shutdown of the campus for most of 2020 and into 2021, the necessity for instructors to have training in online teaching has become apparent. Many instructors were ill-prepared for the sudden transition to online teaching in spring 2020. To provide a better learning experience for students, all faculty were required to take a TOC online or ERT training course to be able to teach in fall 2020. To prepare for the possibility of another shutdown, the Math Department will encourage new faculty to take these courses even after the college opens back up and they are no longer required. Also, the Math Department will continue to assist math faculty new to online teaching by sharing best teaching practices and online resources. To facilitate the transition to online teaching for fall 2020, the department held Community of Practice meetings during summer 2020. These meetings included how to use Zoom and other available online tools to promote a student-centered classroom in an online setting. To facilitate the sharing of resources, we have developed a Canvas shell with modules targeted for specific courses that instructors are able to incorporate into their courses.

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**Q24** **Yes**

Do you have another goal to update?

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Page 10: III. Previous Goals: Update continued

**Q25**

1. Previous Goal 2:

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

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**Q26** **Guided Student Pathways**

2. Which College Strategic Goal does this department goal most directly support? (Check only one)

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**Q27** **In Progress-will carry this goal forward into next year**

3. Goal Status

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Page 11: III. Previous Goals: Update continued

**Q28** **Respondent skipped this question**

Please describe the results or explain the reason for deletion/completion of the goal:

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**Q29**

**Respondent skipped this question**

Do you have another goal to update?

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Page 12: III. Previous Goals: Update (If Applicable) continued

**Q30**

Action Steps for the Next Year: If you are requesting resources in order to achieve this goal, please list them below as action steps and specify the type of request (e.g., submit technology request for new laptop computers).

## Instructional Program Review Annual Update Fall 2021

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

We will continue to collaborate with other departments to ensure students are getting through their math requirements as quickly and efficiently as possible, while still supporting them through their Academic and Career Pathways. Last year, we collaborated with the Psychology Department to provide a concurrent support course, pairing MATH 060 with PSY 215 (Statistics for Behavioral Sciences). Students are now able to complete their math requirements in a single semester with the best math course for their major. We will continue to refine the instructional materials for this MATH 060 course to better support the psychology and social science students.

Political Science has a new course, POSC 170 (Introduction to Political Science Research Methods). The Math Department is planning to work with the Political Science Department so we can link a MATH 160 with this new course starting in spring 2022. This will help students planning to study Political Science learn statistics as it is related to their career pathway.

The department plans to work with Cuyamaca's and SDSU's Business Departments to improve our MATH 178 (Business Calculus) course and ensure that the topics covered are relevant for business students. Because of 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.

### b. Innovative course offerings designed to streamline student pathways

To support STEM students, in spring 2020 we offered a MATH 280/281 (calculus II & III) combo course with MATH 280 the first 8 weeks and MATH 281 the second 8 weeks. This format allows students to complete both in the same semester and enroll in their physics classes sooner. Unfortunately, the college shut down due to COVID-19 concerns just as the MATH 280 portion was finishing up and the MATH 281 had to be taught entirely online. This was less than an ideal situation as MATH 281 is a difficult class to teach (and learn) under the best of circumstances. Despite this, overall, we consider this program successful. We felt the students finishing MATH 280 were prepared for MATH 281 and their future science classes. We offered this format again in spring 2021 and will continue to monitor its impact on student success.

### c. Develop online resources targeting prerequisite skills

In support of STEM students, in spring 2021 the Math Department worked in collaboration with the Physics Department to produce supplemental videos and online Canvas resources to help students in calculus and physics courses. Calculus and physics are difficult subjects for students to learn and without a strong algebra and trigonometry background, students often struggle. By specifically targeting the requisite algebra and trigonometry skills, the materials produced during this sabbatical will provide students with the direct support they need. This will free up more time in the classroom to focus on the calculus topic at hand instead of having to spend time remediating prerequisite skills.

### d. Ensure relevance of BSTEM pathway courses

The department has made significant changes in support of the BSTEM pathways by offering concurrent support courses for PreCalculus and Business Calculus. This has shortened the pipeline for BSTEM students dramatically. We plan to continue working with the Biology, Chemistry, Physics, and Business Departments to ensure that the material taught in the math courses remains relevant to the various BSTEM Academic and Career Pathways and provides students with a solid understanding of the math they will need in their future science, engineering, and business courses.

Before Math Pathways, CHEM 102 for Allied Health and Nursing majors had a prerequisite of MATH 090, which we no longer offer. We worked with the Chemistry Department to determine what skills from MATH 090 were necessary for success in CHEM 102 and included those skills in MATH 060 (concurrent support course for MATH 160). This ensured that students in this area could complete their pathway by taking statistics, which is necessary for their major, instead of forcing them into MATH 110, which would cost them an extra semester of math and teach them skills that are not relevant to their educational goals. We will continue this relationship.

### e. Support Guided Pathways by helping students stay on the path

The Math Department has a commitment to support students that, for various academic or personal reasons, experience a setback on their pathway and to get them back on the right track. We offer staggered start courses, allowing students the opportunity to switch to a new section later in the semester. This gives them the opportunity to move forward without it costing them an additional semester. As part of our Community of Practice and Teacher Mentoring programs, we also encourage faculty to reach out to struggling students so they can intervene before students go astray from their intended path.

**Q31**

**No**

Do you have another goal to update?

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Page 13: III. Previous Goals: Update continued

**Q32**

**Respondent skipped this question**

1. Previous Goal 3:

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**Q33**

**Respondent skipped this question**

2. Which College Strategic Goal does this department goal most directly support? (Check only one)

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**Q34**

**Respondent skipped this question**

3. Goal Status

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Page 14: III. Previous Goals: Update continued

**Q35**

**Respondent skipped this question**

Please describe the results or explain the reason for deletion/completion of the goal:

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**Q36**

**Respondent skipped this question**

Do you have another goal to update?

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Page 15: III. Previous Goals: Update continued

**Q37**

**Respondent skipped this question**

Action Steps for the Next Year: If you are requesting resources in order to achieve this goal, please list them below as action steps and specify the type of request (e.g., submit technology request for new laptop computers).

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**Q38**

**Respondent skipped this question**

Do you have another goal to update?

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Page 16: III. Previous Goals: Update continued

**Q39** Respondent skipped this question

1. Previous Goal 4:

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**Q40** Respondent skipped this question

2. Which College Strategic Goal does this department goal most directly support? (Check only one)

---

**Q41** Respondent skipped this question

3. Goal Status

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Page 17: III. Previous Goals: Update continued

**Q42** Respondent skipped this question

Please describe the results or explain the reason for deletion/completion of the goal:

---

Page 18: III. Previous Goals: Update continued

**Q43** Respondent skipped this question

Action Steps for the Next Year: If you are requesting resources in order to achieve this goal, please list them below as action steps and specify the type of request (e.g., submit technology request for new laptop computers).

---

Page 19: IV. New Goals

**Q44** No

Would you like to propose any new goal(s)?

---

Page 20: IV. New Goals continued

**Q45** Respondent skipped this question

1. New Goal 1:

---

**Q46** Respondent skipped this question

2. Which College Strategic Goal does this department goal most directly support? (Check only one)

---

**Q47** Respondent skipped this question

3. Please describe how this goal advances the college strategic goal(s) identified above.

---

**Q48** Respondent skipped this question

4. Please indicate how this goal was informed by SLO (student learning outcomes) assessment results, PLO (program learning outcomes) assessment results, student achievement data, or other qualitative or quantitative data (from any source):

---

**Q49** Respondent skipped this question

5. Action Steps for this Year: If you are requesting resources in order to achieve this goal, please list them below as action steps and specify the type of request (e.g., submit technology request for new computer hardware).

---

**Q50** Respondent skipped this question

6. How will this goal be evaluated?

---

**Q51** Respondent skipped this question

Do you have another New Goal?

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Page 21: IV. New Goals continued

**Q52** Respondent skipped this question

1. New Goal 2:

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**Q53** Respondent skipped this question

2. Which College Strategic Goal does this department goal most directly support? (Check only one)

---

**Q54** Respondent skipped this question

3. Please describe how this goal advances the college strategic goal(s) identified above.

---



**Q55** Respondent skipped this question

4. Please indicate how this goal was informed by SLO (student learning outcomes) assessment results, PLO (program learning outcomes) assessment results, student achievement data, or other qualitative or quantitative data (from any source):

---

**Q56** Respondent skipped this question

5. Action Steps for this Year: If you are requesting resources in order to achieve this goal, please list them below as action steps and specify the type of request (e.g., submit technology request for new computer hardware).

---

**Q57** Respondent skipped this question

6. How will this goal be evaluated?

---

**Q58** Respondent skipped this question

Do you have another New Goal?

---

Page 22: IV. New Goals continued

**Q59** Respondent skipped this question

1. New Goal 3:

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**Q60** Respondent skipped this question

2. Which College Strategic Goal does this department goal most directly support? (Check only one)

---

**Q61** Respondent skipped this question

3. Please describe how this goal advances the college strategic goal(s) identified above.

---

**Q62** Respondent skipped this question

4. Please indicate how this goal was informed by SLO (student learning outcomes) assessment results, PLO (program learning outcomes) assessment results, student achievement data, or other qualitative or quantitative data (from any source):

---

**Q63** Respondent skipped this question

5. Action Steps for this Year: If you are requesting resources in order to achieve this goal, please list them below as action steps and specify the type of request (e.g., submit technology request for new computer hardware).

---

**Q64** Respondent skipped this question

6. How will this goal be evaluated?

---

**Q65** Respondent skipped this question

Do you have another New Goal?

---

Page 23: IV. New Goals continued

**Q66** Respondent skipped this question

1. New Goal 4:

---

**Q67** Respondent skipped this question

2. Which College Strategic Goal does this department goal most directly support? (Check only one)

---

**Q68** Respondent skipped this question

3. Please describe how this goal advances the college strategic goal(s) identified above.

---

**Q69** Respondent skipped this question

4. Please indicate how this goal was informed by SLO (student learning outcomes) assessment results, PLO (program learning outcomes) assessment results, student achievement data, or other qualitative or quantitative data (from any source):

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**Q70** Respondent skipped this question

5. Action Steps for this Year: If you are requesting resources in order to achieve this goal, please list them below as action steps and specify the type of request (e.g., submit technology request for new computer hardware).

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**Q71** Respondent skipped this question

6. How will this goal be evaluated?

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Page 24: Resources Needed to Achieve Program Goal(s)

**Q72**

What resources is your program requesting this year to achieve the program's goals? (Check all that apply)

**Technology Resource Needs,**

**Facilities Requests,**

**Faculty Resource Needs**

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Page 26: Final Check

**Q73**

Are you ready to submit your program review? If you would like to go back and review a section, select a section and click "Next."

**I am ready to submit my program review**

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