



Cañada College

**COMPREHENSIVE
PROGRAM REVIEW
REPORT**

Mathematics

Program Context

1. Mission

Share how your program contributes to the College or fits into the College's Mission. For example, what other academic programs and student/academic services does your program engage with? Examples of student/academic services include the Learning Center, Library, STEM Center, SparkPoint, Dream Center, etc. Another example, how does your program fit into any of the College's plans (such as Equity, Technology, Strategic Enrollment, etc.)? If your program has a mission statement, you may include it here.

The Cañada Mathematics Department's mission is to provide a foundation for a liberal arts education and for the study of the sciences. This is achieved by offering a wide range of courses aimed at developing basic skills in computation and quantitative reasoning.

As one of the largest departments at our college, we interact with most programs in some way. Our department plays a central role in our college's compliance with significant state initiatives like Equitable Placement and Completion (AB 705 and AB1705) and Common Course Numbering (AB1111).

Our faculty collaborates closely with our learning center to develop and promote learning workshops. We also work closely with the Middle College (Math 120 and Math 225), the College of Working Adults (Math 200), Athletics (Math 200 cohort), and Umoja (Math 200 Umoja Cohort) by providing cohort sections for each of these programs. There are also plans in Spring 2026 to have an ANNIPISI learning community.

2. Articulation

Are there changes in curriculum or degree requirements at high schools or 4-year institutions that may impact your program? If so, describe the changes and your efforts to accommodate them. If no changes have occurred, please write "no known changes."

Common Course Numbering (AB1111)

The most significant change currently impacting course articulation is the CCN initiative (AB1111), which aims to standardize course templates and naming conventions across the 116 California community colleges. This initiative is intended to facilitate smoother articulation; however, there remains uncertainty about how four-year institutions will interpret these standardized courses. As a result, we must continually work to ensure our courses remain current for articulation purposes.

CalGETC

Additionally, the unification of the CSU and IGETC general education patterns, known as CalGETC, is expected to have a minimal impact on our programs. Many of our general education courses are already UC-transferable and align with the IGETC pattern, allowing them to satisfy Area 2 in the new framework.

AB1705

In response to AB1705, which requires that first-semester BSTEM students be placed in either Business Calculus (Math 241) or Calculus I (Math 251), we have developed corequisite courses: Math 841 for Math 241 and Math 851 for Math 251. These corequisites are designed to provide students with additional instructional time and support, enhancing their chances of successfully completing these courses.

3. Community & Labor Needs

Are there changes in community needs, employment needs, technology, licensing, or accreditation that may affect your program? If so, describe these changes and your efforts to accommodate them. If no changes have occurred, please write "no known changes". CTE programs: identify the dates of your most recent advisory group meeting and describe your advisory group's recommendations for your program.

No known major changes that need to be reflected.

Looking Back

4. Curricular changes

List any significant changes that have occurred over the prior years in your program's curricular offerings, scheduling, or mode of delivery. For decisions made by your department, explain the rationale for these changes. If applicable, how have state policy changes affected your curricular offerings?

Over the past three years, a significant change in our program's curricular offerings has been driven by the implementation of AB1705, which led to the removal of Math 120 from our offerings to non-middle college students. Enrollment in Math 120 dropped dramatically from 294 students in the 2021-2022 school year to just 16 middle college students in 2023-2024. This decline coincides with an overall decrease in math course enrollment, from 2,547 to 2,232 students—a 12% reduction. While we are not specifically tracking individual students, the correlation suggests that we have not retained the students who would typically enroll in this course. This is particularly relevant as we prepare to phase out Math 225 in compliance with AB1705.

With Math 225 potentially no longer available to students starting in Fall 2025, we plan to add more sections of Math 241 (with or without corequisite Math 841) and Calculus I (with or without corequisite Math 851). This structure allows students who need additional support to enroll in the corequisite courses, while those who do not can opt for stand-alone sections. Math 841 is a one-credit course, and Math 851 is a two-credit course. The corequisites are scheduled immediately before or after the regular Math 241 or Math 251 classes.

Additionally, we have restructured Math Jam to better meet our current needs. This semester (Fall 2024), we have introduced periodic workshops led by instructional aides in the STEM Center on topics that students often find challenging, such as factoring, trigonometry, and exponential and logarithmic functions. We also have a dedicated Math Jam hour every Wednesday, where multiple faculty members are present alongside instructional aides and tutors to provide additional student support.

5A. Progress Report - IPC Feedback

5B. Progress Report - Prior Program Goals

Provide a summary of the progress you have made on the program goals identified in your last program review.

Goal Description: Community of Practice Continue to develop and institutionalize the Community of Practice model

FLP is well integrated into the instruction community. We have extended this idea to be applied to AB1705 Math/English and Honors.

Goal Description: Optimize Support Courses

Math 800, 825, and 841 are now well established courses. Now we are working on Math 851

Goal Description: Compliance with AB705

With the implementation of co-requisite support courses (Math 825, 800, and 841), curricular changes to prerequisites, and the implementation of guided placement tool, we are in full compliance with AB705. Now we are working on the compliance for AB1705.

Goal Description: Establish Metrics to Assess Different Modalities

See success and retention data in question 8c.

6A. Impact of Resource Applications

Describe the impact to date of previously requested new resources (assignment, equipment, facilities, research, funding) including both resource requests that were approved and not approved. What impact have these resources had on your program and measures of student success? What have you been unable to accomplish due to resource requests that were not approved?

We did not make any resource request last cycle.

Program Review

6B. Impact of Staffing Changes

Describe the impact on your program of any changes within the last program review cycle in staffing levels (for example, the addition, loss or reassignment of faculty/staff). If no changes have occurred please write "not applicable."

Our department has changed considerably since the last program review. With the loss of long-time faculty members Richard Follansbee, Evan Innerst, and Po Tong, there has been a deficit of institutional knowledge and experience. Their contributions to our students and faculty community will be missed.

Fortunately, we have been able to hire replacements to keep our department at 7 full-time members. Helena Almassy has contributed significantly to our Calculus co-requisite curriculum by teaching one of the two Math 851 sections in Fall 2024 and with her participation with the AB1705 community of practice. The other Math 851 section is being taught by Sumathi Shankar who has taken on the additional responsibility of being the faculty coordinator for AB1705 for Mathematics.

As AB1705 coordinator, Sumathi Shankar has been working closely with the administration, and the AB1705 Math Faculty leads from CSM and Skyline Colleges on bringing the innovative method of teaching called Building Thinking Classrooms in Math to Cañada College.

Our other two new faculty members, Hongyan Meng, and Amira Alkeswani, started in Fall 2024 and have helped bring new energy to the Calculus co-requisite community of practice and Passion Stats Community.

We have also hired Jason Ramos, who has been helping to bridge the department and

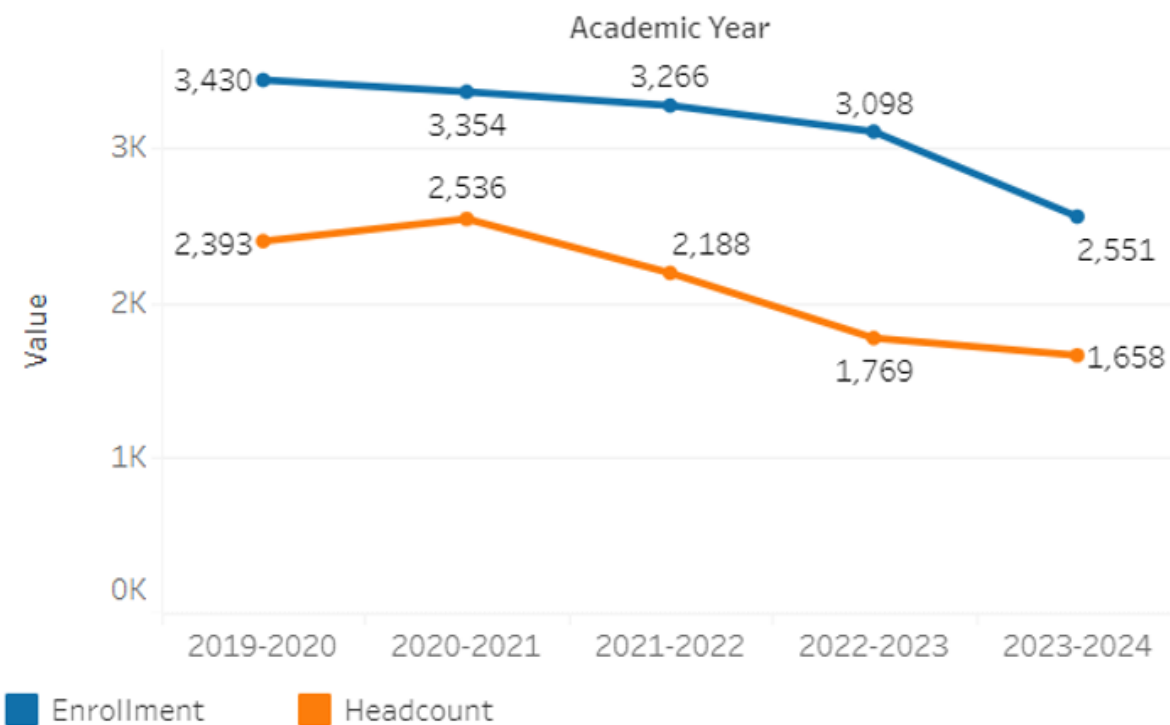
Current State of the Program

7A. Enrollment Trends

Use the data provided by PRIE to examine your enrollments by department or courses. Describe trends in headcount, FTES, and load. If applicable, describe any other enrollment data that is relevant to your program.

7A

Enrollments and Headcount

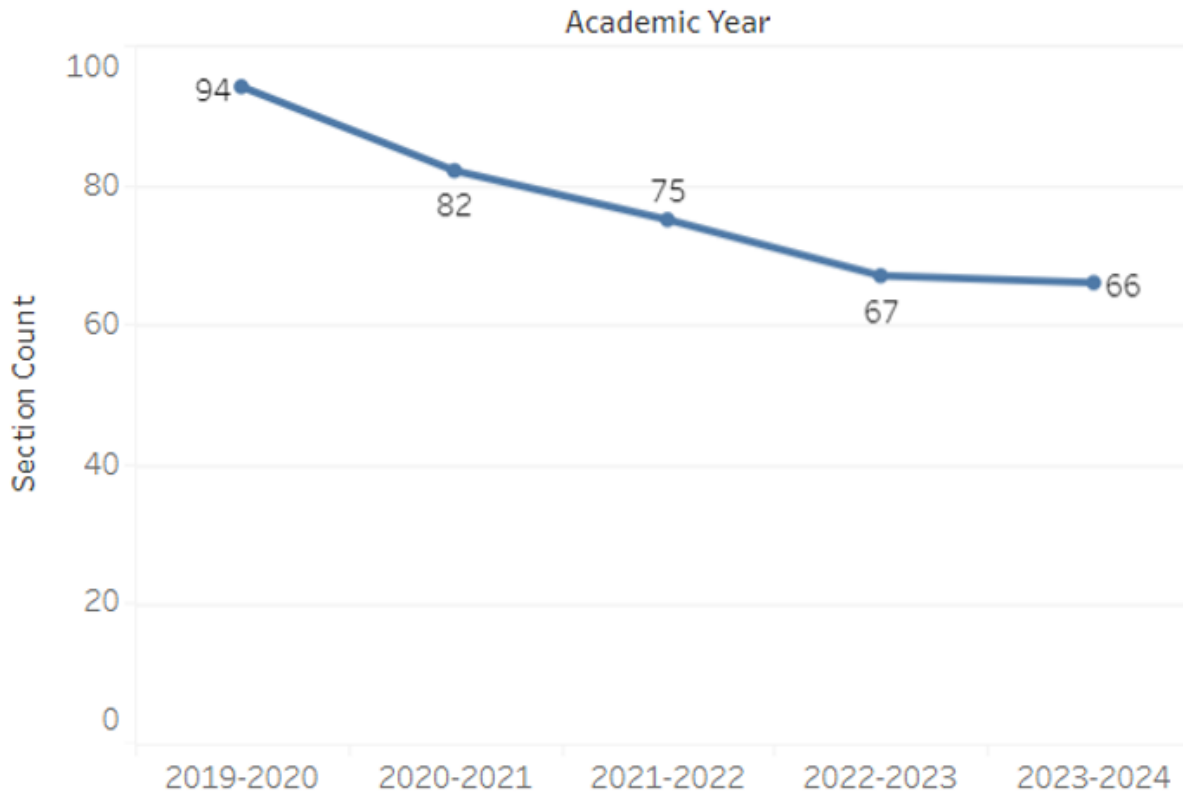


Program Review

Enrollments have been trending down in Math overall over the past 5 years. The decline was relatively minimal every year with the exception of the drop in 2023-2024 where it went from 3,098, the academic year prior, to 2,551. Headcount followed roughly the same trajectory going from 2,393 in 2019-2020 to 1,658 in 2023-2024.

Section count has also roughly followed the enrollment trend.

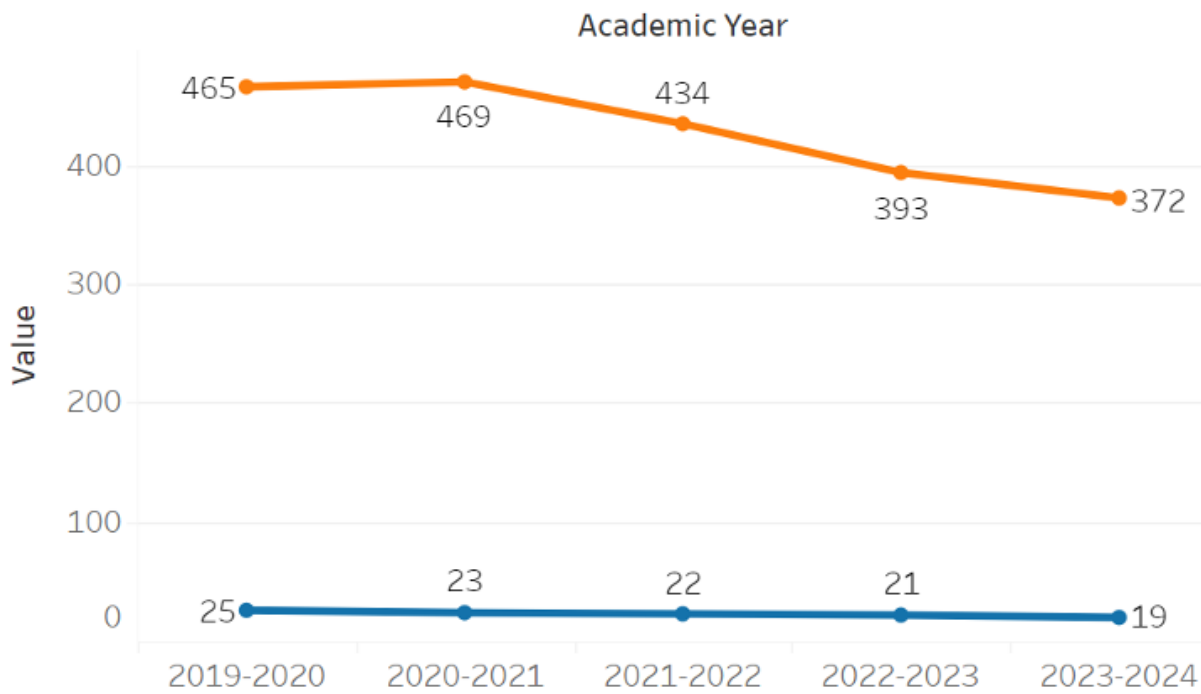
Section Count



FTEF has declined consistently every year, going from 25 in 2019-2020 to 20 in 2023-2024. This follows the same trend as enrollment. FTES has consistently gone down every year apart from 2020-2021 where it went from 465.2 in 2019-2020 to 469.3. By 2023-2024, it had reached 371.7.

Program Review

FTEF



■ FTEF

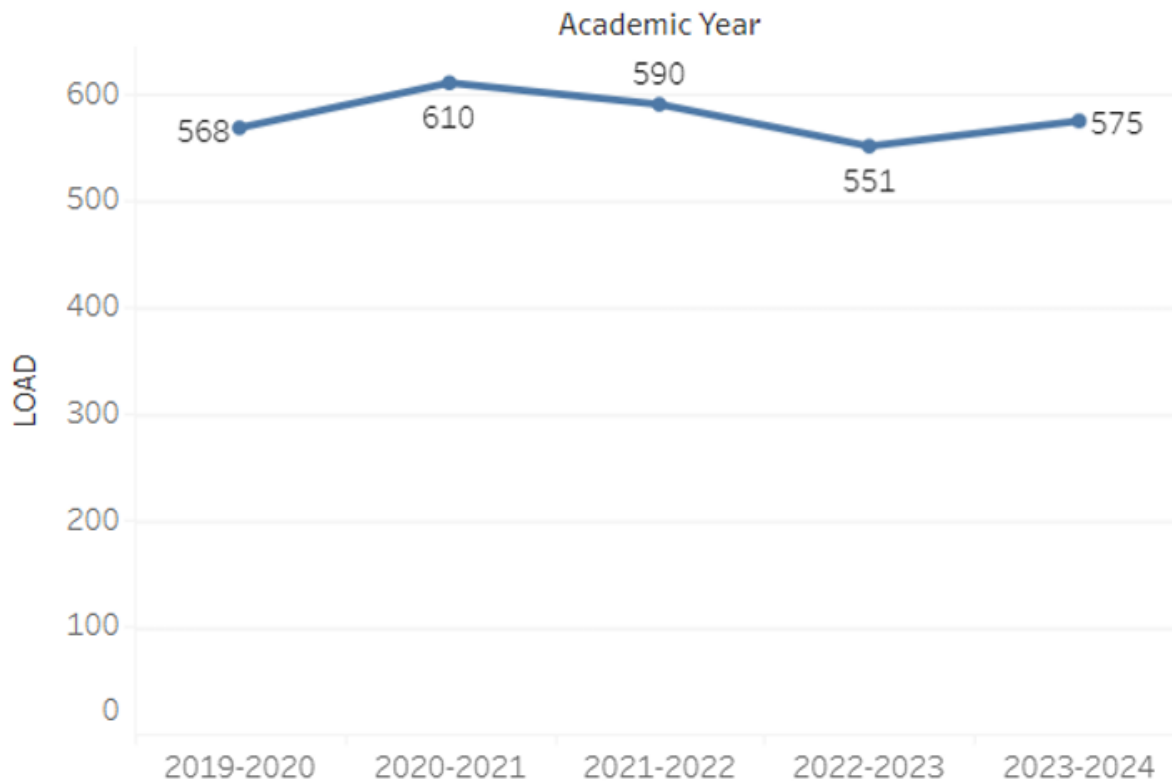
■ FTES

Load has remained roughly stable over the past five years, much higher than the overall college load of 434 in 2023-24.

While it is difficult to assess the causes of the drop in enrollment, structural changes induced by AB 705 and AB 1705 are certainly significant contributors to this change.

Program Review

LOAD



Load has remained roughly stable over the past five years, much higher than the overall college load of 434 in 2023-24.

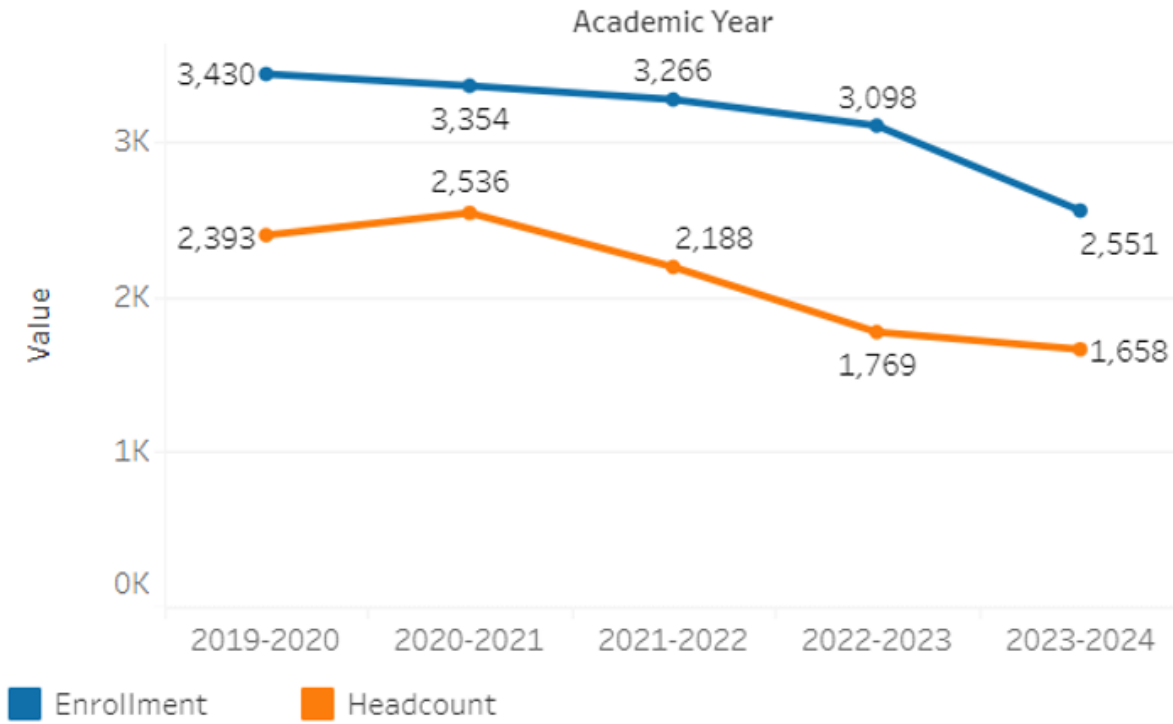
7B. Significant Changes in Your Program

Have there been any significant changes in enrollment trends or course offerings? For example, has there been a significant increase or drop in FTES or Load? If applicable, consider trends in class cancellation rates and how it might have affected your course offerings. If needed, consider how the pattern of course offerings (times/days/duration/delivery mode/number of sections) affected your enrollment?

The most significant change since the last program review is the 30% reduction of course sections offered while concurrently having a 26% reduction in student enrollment. At the same time, many factors undoubtedly contribute, including but not limited to the region's healthy economy and the shortening of pathways induced by Ab 705. The reduction is compatible with the reduction in courses actually driving the reduction in enrollments. Students who didn't feel ready to take our transfer-level gateway courses, even with support, aren't enrolling, and we may be losing contact with those students. Further studies must be done to see if this effect is as we have seen anecdotally. These changes have made the department more cautious about further reducing courses in pursuit of higher throughput rates, as some of these rates may be improving due to a filtering effect. We will still work to improve our support structures with the new course co-requisites, improving pedagogy and strengthening our connects with other campus support services like the learning center, eops, mesa, etc...

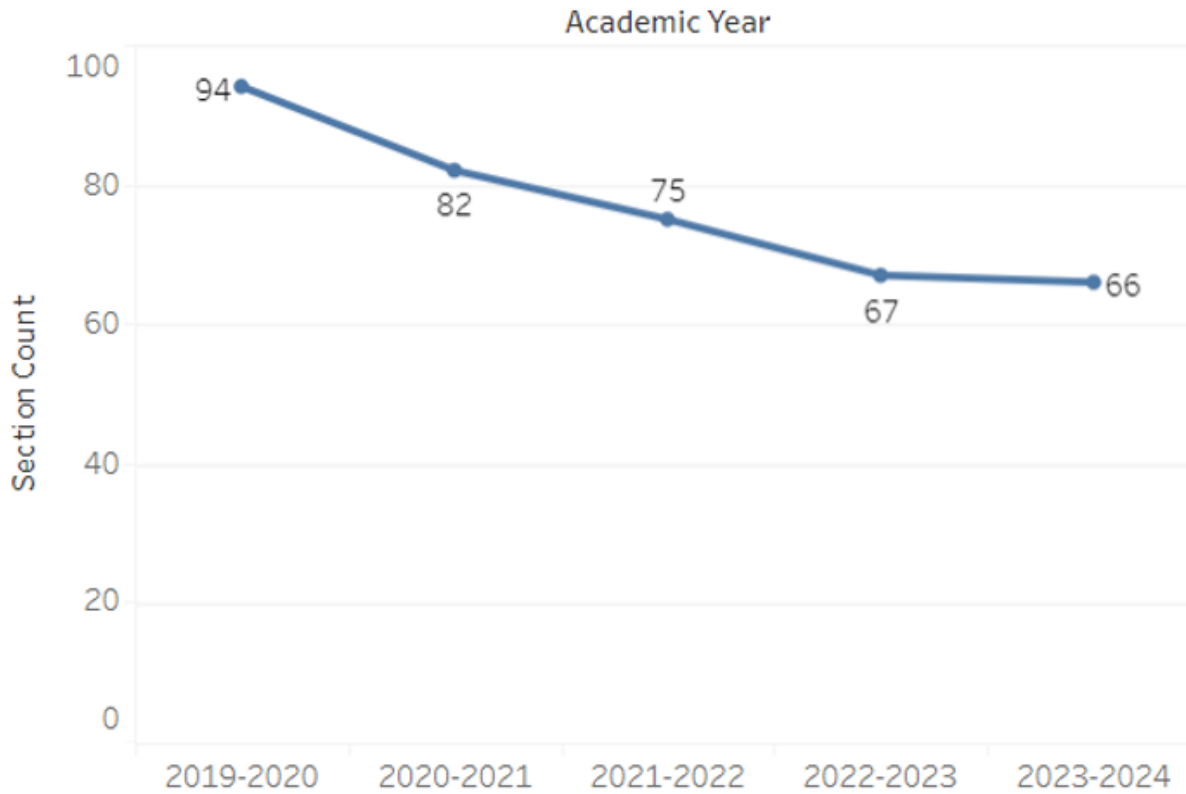
7A

Enrollments and Headcount



Program Review

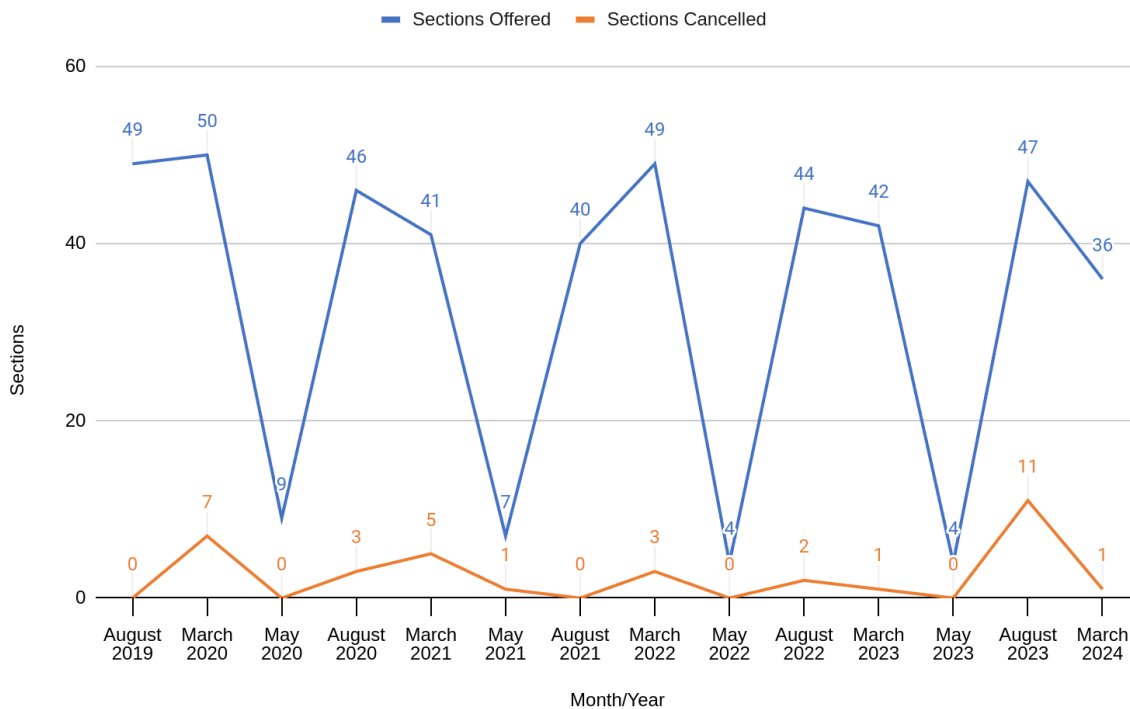
Section Count



There are no concerning trends in class cancellations, as most of the courses that are offered generally run. The major spikes are due to course changes (scheduling, naming, etc.) that are recorded as cancellations.

Program Review

Sections Offered/Cancelled (August 2019 - March 2024)



7C. Planning for Your Program

What changes could be implemented, including changes to course scheduling (times/days/duration/delivery mode/number of sections), curriculum, marketing, and articulation of pathways that might improve these trends? If applicable, include plans for faculty recruitment and faculty training. NOTE: If other sources of data are used, please upload these documents or provide URLs.

We have added Math 851 and Math 841 as course offerings to support students starting with Math 251 (Calculus I) or Math 241 (Business Calculus) in their first semester from Fall 2025. In anticipation of those changes, the Math department decided to pilot two sections of Math 851 in Fall 2024. We have one cohort Math 251/851 class, which is hard linked (every student in this class is enrolled in both 251 and 851 at the same time), while a second Math 251/851 class is soft linked (some of the students are enrolled in both classes while others are only enrolled in the Math 251 class). In addition, we have one section of stand-alone Calculus I and one online section of Calculus I. All Calculus I sections are taught by full-time faculty. We are currently offering two sections of Math 241.

AB1705 coordinator Sumathi Shankar worked with the administration and AB1705 lead faculty from CSM and Skyline to collaborate on bringing two workshops on Building Thinking classrooms in Math (based on the book by the same name by Peter Liljedahl) so that math faculty across the district can explore innovative methods of teaching in their classrooms.

As a result, Math faculty across the district have participated in two all-day workshops on Building Thinking Classrooms (BTC) during Flex Days, (April Flex Day at Skyline College and October 9th Flex Day at Cañada College) Math faculty from all three community colleges from the district also participated in the BTC book club on a regular basis to discuss what strategies from the book they tried in their classroom and what they found needed tweaking etc.

Some of the faculty have been attending California Acceleration Project's Webinars for professional development and webinars from California Community College System chancellor's office to get more information and clarification on upcoming changes brought by AB1705 law.

Plans going forward:

1. Increase the number of sections offered for Calculus I and Business Calculus.
2. Increase the number of sections offered with corequisites

Program Review

3. Continue to look for professional development opportunities for math faculty
4. Continue to collaborate with math faculty across the district.
5. Work with counselors, learning centers, and STEM centers to promote corequisite classes so that students who need support will enroll in them from the beginning of the semester.
6. Have smaller classes capped at 24 so that instructors can provide much-needed support to students

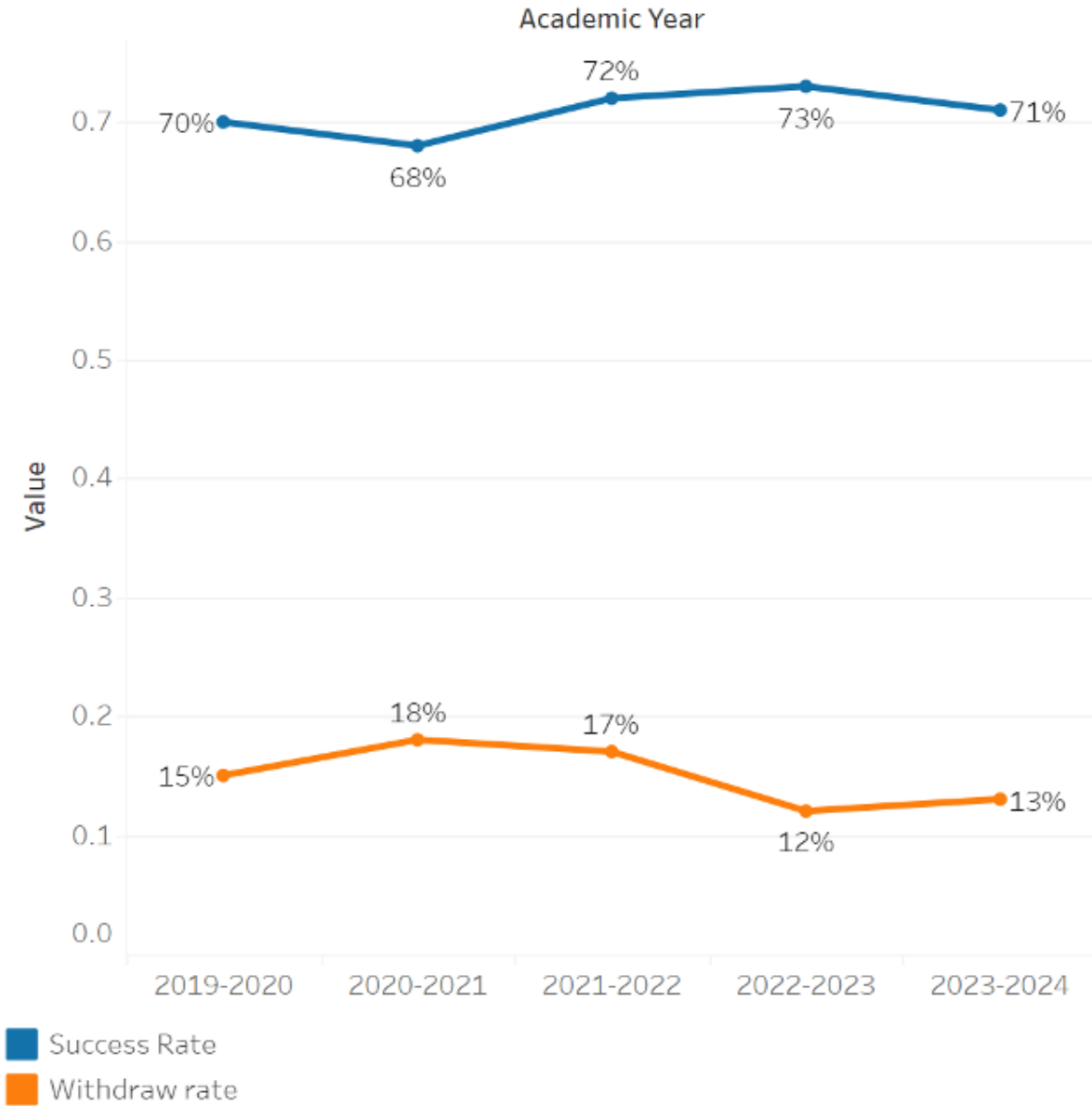
8A. Access & Completion

Describe the student completion and success rate in your courses and/or program using the data provided by PRIE. Look at your course offerings, in the last program review cycle was it possible for a student to complete your certificates or degrees while only completing courses at Cañada College? How can the college help you improve student completion and success? What changes could be made?

Success rates have remained relatively flat overall. Although starting in 2021-2022 success rates consistently remained above 70% where before it was below that point. Withdrawals are essentially the same story although there was a more significant decline from 17% to 12% in 2022-2023.

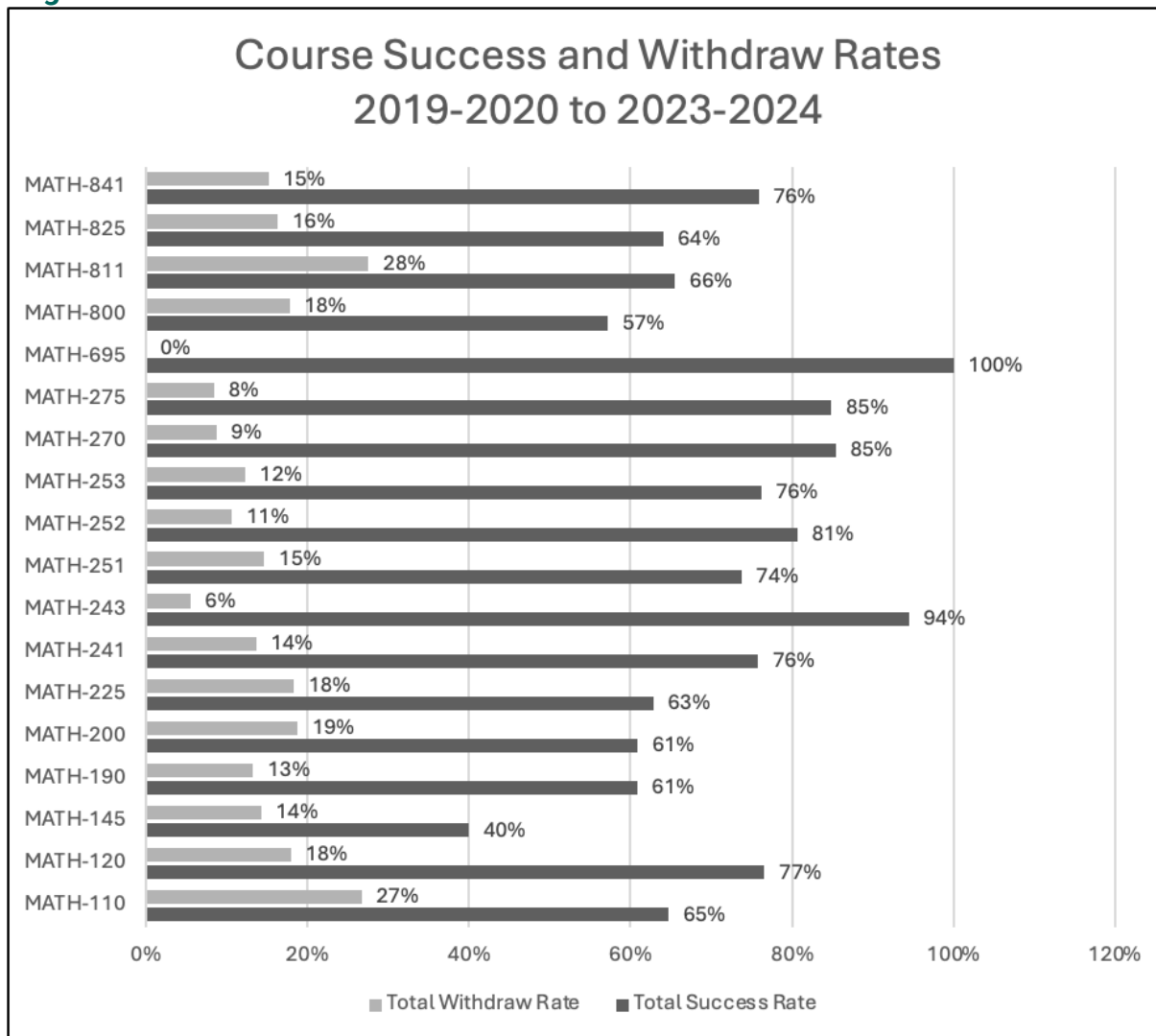
8C

Success and Withdraw Rate



The minimum withdraw rate was 0% in MATH-695 while the maximum withdraw rate was 28% in Math 811. The minimum success rate was 40% in MATH-145 while the highest was 100% in MATH-695.

Program Review



How can the college help you improve student completion and success? What changes could be made?

1. Have smaller classes (24 max) for all math courses so that students can get all the support they need in class.

Rationale: (a) students would need more support and resources than ever before with new changes brought about by AB1705. (b) Since English and Math are both impacted by AB1705, it only makes sense to have math class sizes to match those of English class size. (c) Having a smaller class size can boost student engagement, retention, success and completion rates.

1. More marketing of the corequisite classes at the college level such as on the television screens (in high traffic areas such as the cafeteria, STEM center, learning center, building 23, etc.) to increase visibility of these courses.
2. Have all math classrooms painted with white board paint like the STEM center

Rationale: We have teaching practices that center around group-work-based activities and having a large collaborative space optimizes the teaching experience for us as well as the learning experience for the students.

1. Have a studio space for recording math lectures that would include cameras, microphones, board spaces, etc.

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2. Having a dedicated STEM counselor to help students navigate through all the new changes coming from AB 1705, common course numbering etc.
3. Hire more instructional aides for math.
4. Recruit more embedded tutors for classes with corequisites.

8B. Student Equity

One of the goals of the College's Student Equity plan is to close the performance gaps for disproportionately impacted students. Use the data provided by PRIE that indicates which groups are experiencing a disproportionate impact in your program. Which gaps are most important for improving outcomes in your program? How can the college help you address these gaps? What changes could be made?

The Equity and Disproportionate Impact (DI) dashboard was used to identify subgroups that may have been disproportionately impacted in Mathematics in the most recent academic year (2023-2024)^[1]. The three metrics used to examine potential disproportionate impact were enrollment rates (referred to as access), success rates, and withdrawal rates. The rate for each subgroup was compared to either the college-wide rate (access) or the overall program-level rate (success and withdraws). The difference between the two rates is known as the 'gap' and may be referred to as a performance gap or equity gap. Student subgroups that may have been disproportionately impacted in Mathematics appear below (see Table 1-3).

Access

Access indicates what student subgroups are enrolling in courses based on unique student counts. Enrollment data revealed two student subgroups were underrepresented in Mathematics classes compared to the college-wide population (see Table 1). For instance, female students are underrepresented in Mathematics. The proportion of female students in Mathematics across all course modalities was 11 percentage points lower than that of female students enrolled college-wide.

Table 1.

SubGroup	Gap
Female	-11%

Unfortunately, the gap in enrollment between the genders continues to rise. 7% gap in 2021 has increased to 11% currently. This gap was an essential factor in having a heavy representation of our female faculty involved in our STEM pathways.

Success

Success is the rate at which different student subgroups pass courses and is based on enrollment. The success rate for different subgroups in Mathematics was compared to the overall success rate in Mathematics. The difference between the two rates (the gap) revealed eight subgroups may have been disproportionately impacted (see Table 2). For example, the success rate for Hispanic students in Mathematics was 10 percentage points lower than the overall success rate in Mathematics during the 2023-2024 academic year.

Table 2.

SubGroup	Gap (2024)	Gap(2020)
Hispanic	-10%	-11.7%
Hispanic - Female	-10%	-11.4%
Hispanic - Male	-10%	-11.9%
23-28	-7%	-3.7%

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50-59	-28%	-13%
First Generation	-9%	-7.9%
Foster Youth	-24%	-23.8% (very small n)
Low Income	-8%	-3.9%

Of the subgroups listed, we have seen a closing of the gaps from 2020-2021 for Hispanic, Hispanic-Female, and Hispanic-Male in the context of raising overall success rates. (from 67.2% in 20-21 to 68.5% in 23-24) While there is still work to do, this change is heartening.

The other groups saw an increase in the gap, though many of the groups had sample sizes in the single digits, so fluctuations may not be significant.

Withdraws

Withdraws is the rate at which a student withdraws from a course, with higher numbers being worse, as they indicate greater withdraw rates. The withdraw rates for subgroups in Mathematics was compared to the overall withdraw rate for the program. Six subgroups had withdraw rates that were significantly higher than the overall rate, suggesting these groups experienced disproportionate impact in Mathematics. First generation students were disproportionately impacted in Mathematics during the 2023-2024 academic year. First generation students had withdraw rates 4 percentage points higher than the average withdraw rate for Mathematics.

Table 3.

SubGroup	Gap
Hispanic - Female	5%
23-28	6%
29-39	12%
50-59	22%
First Generation	4%
Foster Youth	36%

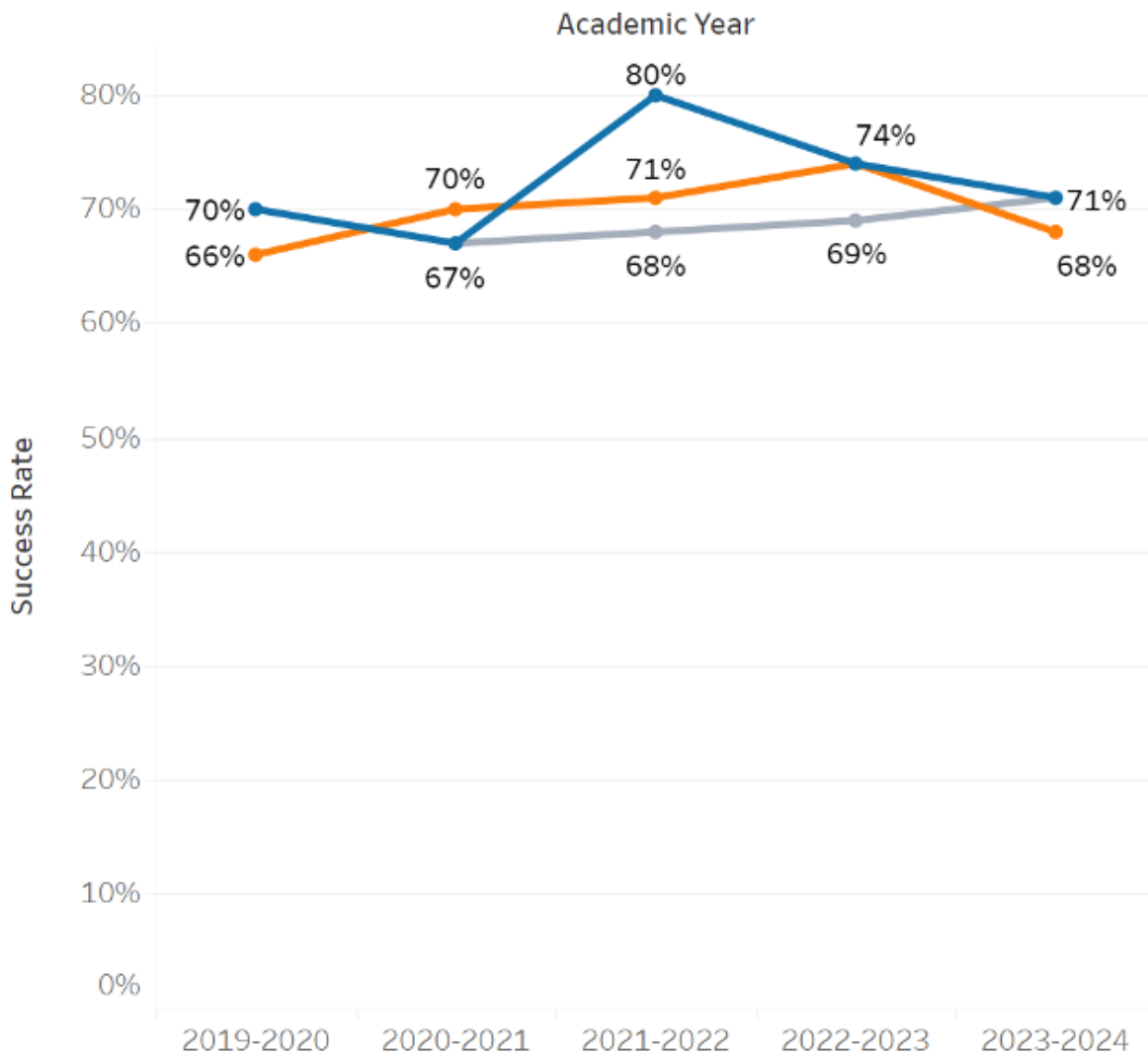
8C. Completion – Success Online

The college has a goal of improving success in online courses. Using the data provided by PRIE, what significant gaps do you see in success between online/hybrid and non-online courses? What changes could be made to reduce these gaps? If your program does not offer online/hybrid courses, please write “not applicable”.

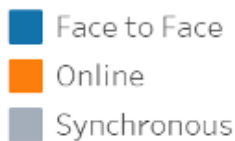
Other than in 2021-2022, the success rates between different modalities has stayed relatively consistent with each other. With Face to Face and Synchronous having identical success rates and Online being two percentage points lower.

Program Review

Success Rate Modality



** NOTE: All metrics for subpopulations with fewer than 10 students are suppressed.
6/26/2024 9:23:52 PM. To avoid misinterpretation of dashboard data, consultation
with PRIE is strongly recommended prior to using any of the data for research or
publication.*



9A. SLO Assessment - Compliance

Are all active courses being systematically assessed over a three-year cycle? Refer to the Program's /Department's Three-Year Assessment Plan and describe how the plan is completed across sections and over time.

SLO's on all active courses are planned out in a three-year cycle. Prof. Evan Innerst took on the responsibility of collecting SLO's, but since his retirement, we fell a bit behind with the collection of SLO's. The department plans on

Program Review

creating a Department coordinator position that will help to coordinate these initiatives and keep things from falling through the cracks when changes occur.

9B. SLO Assessment - Impact

Summarize the dialogue that has resulted from these course SLO assessments. What specific strategies have you implemented, or plan to implement, based upon the results of your SLO assessment?

But now, we are developing a plan of assessing and collecting data. We are discussing the assessment process through Canvas.

10 PLO Assessment

Describe your program's Program Learning Outcomes assessment plan using your Program/Department's Three Year Assessment Plan Summarize the major findings of your PLO assessments. What are some improvements that have been, or can be, implemented as a result of PLO assessment?

This year, we plan to align the SLO's with the PLO's in Nuventive.

Looking Ahead

11. Planning for the future is an important part of Program Review. This is your opportunity to identify new directions for growth and improve your program. Based on your analysis of the data and your responses to the questions above, identify specific and measurable goals and action plans for achieving those goals. Consider goals such as, but not limited to: updating curriculum, closing equity gaps, responding to student and community needs, etc. Please enter your response in the textbox below

Data Science AS-T

Data Science is an interdisciplinary field that combines Computer Science, Mathematics and Statistics to derive insight from large data sources. With applications across many disciplines there will be plenty opportunities for people with skills in this discipline. Our department plans on developing an Associates Degree for Transfer, that is designed to feed Data Science programs at SJSU, Cal State East Bay, UC Davis, Berkeley and UCLA. This can be accomplished with minimal expansion in course offerings but could potentially give our campus an exciting new option in Science and Technology.

Asian American and Native American Pacific Islander-Serving Institution (AANAPISI) Learning Community

Since this possibly goes into effect in Spring 2026 the development of this learning community is still in progress.

NBS Ed Pipeline

The NBS Ed Pipeline is a program directed by SFSU Estuary and Ocean Science Center that links and interdisciplinary team of Community College professors across the entire bay area to develop curriculum and opportunities to introduce our students to opportunities in Environmental Science and Restoration in the Bay Area. Our math faculty is participating to bring more environmental science applications into our Mathematics, Statistics and Data Science pathways.

Embedded Tutoring Expansion

We will continue to work with our partners in the learning center to expand the embedded tutoring program to more classes. Embedded tutoring has become an essential component of our high contact support courses and has allowed us to keep our success rates high as we accommodate students with less mathematical preparation in our higher level courses.

Program Review

Next Step: If your program is requesting resources, please go to “STEP 2: Resource Request (OPTIONAL)” and submit your specific requests there. Otherwise, this is the last prompt in the comprehensive program review form.

Supporting Information

Resource Requests

Non-Personnel Item (2024 - 2025)

Non-Personnel Item (2024 - 2025)

Requested Year

2024 - 2025

Program Requesting Resources

Mathematics

Item Requested

Multimedia recording space.

Status

New Request - Active

Map Request to College Goals and Strategic Initiatives

Which of Cañada College's Goals does this resource request support?

Student Access and/or Success and/or Completion