

SAN DIEGO
MESA COLLEGE



Program Review

Summary and Reflections with Unit Goals, Action Plans, and Updates

Instructional Program - Chemistry (CHEM)

Executive Summary

Describe the successes and challenges your unit has faced since the last comprehensive review.

Chemistry is considered to be the central science because physics, engineering, biology, and allied health majors, and many other majors require courses in chemistry. Because of this, the Chemistry Department offers many courses ranging from preparatory chemistry, general chemistry, organic chemistry, analytical chemistry, allied health prerequisites, and a general education course with an emphasis in environmental issues.

Currently, there are 10 full time faculty members and 18 adjuncts in the department. Adjunct FTEF is 9.0 for Fall 2023 which is 46% of our total FTEF. There are four Instructional Laboratory Technicians. Our fill rate for Fall 2023 is 96%, with a productivity (FTES/FTEF) of 14.5. The department is hiring a full time tenure track professor for Analytical Chemistry to start in Spring 2024.

The Chemistry Department creates a supportive learning environment that spans across our curriculum. We constantly assess our student success across courses that form a sequence (e.g. Majors Preparation Track 152->200->201 or Allied Health Track 100->130->160). Our department works hard to establish a set core of standards so that students can succeed as they move through our courses. Laboratory courses provide an equitable way to present hands-on learning that supports lecture material. Laboratory work also provides a venue for students to work collaboratively and make STEM relationships that can support them through their courses. The Chemistry department prides itself on having student centered teaching and providing high quality equitable instruction grounded in standards for scientific work that will allow students to be successful at four year schools. The hallmark skills that our department fosters are critical thinking and hands-on experiential learning. Our professors use lecture presentations, small group discussions, worksheets, application to the real world, and hands-on laboratory training to help students understand and learn what is considered to be a very difficult and intimidating subject. Critical also is our interaction with students via office hours, review sessions, support courses such as Chem 16 and Chem 20, and Canvas.

The Chemistry Department is committed to preparing students for transfer to four year schools and providing a foundation in future work in science or professional schools. The Chemistry Department is committed to preparing students for transfer to four year schools and provide a foundation in future work in science or professional schools. There were 6 Associate Degrees in Chemistry and 8 degrees in Liberal Arts and Sciences Science Studies-Chemistry conferred during Fall 2023. 21% were Asian American and 29% were Latinx.

Our departmental goal is to create spaces to greet students in the most positive way and to help them reach their potential as STEM students. San Diego is a STEM hub and has two of the most highly ranked schools for STEM in the State: UCSD and SDSU as our transfer institution. We take pride in preparing students for transfer and honing in on their analytical and critical thinking abilities. This is a process for students as they make their way through our courses to achieve their dreams of becoming scientists, engineering, pharmacists, doctors, nurses, physical therapists, and environmental scientists. Chemistry does not have many students majoring in chemistry (see previous paragraph). However, we are a highly enrolled program due to our role in supporting Biology (both Biology Majors and Allied Health Majors) and Engineering Majors. Our Department has worked together as a team and is proud of the work they have achieved to reduce barriers to student success. We have pivoted in so many ways and always worked as a team to provide quality learning for our students. These transitions required constant re-writing and adjusting of course materials and countless hours of work from our faculty. Many transitions occurred over the last three years including face-to-face, to online even in lab, to returning during the pandemic for limited labs, to full return Fall 2021, and then pivoting to first three week remote and then back to campus Spring 2022. Fall 2022-Spring 2023 feels a lot more "normal" and natural. The goal of the Chemistry Department has been to provide equitable quality education in a student centered and positive learning environment.

The philosophy of the department is to be student centered and equitable while upholding standards of

Summary and Reflection

excellence in scientific and critical thinking. Standards are important to our department while providing an engaging, supportive, and positive learning environment. This is achieved by communicating clear expectations to students, student centered pedagogy, equitable teaching practices, open door attitude to students, updating and improving laboratory courses, support courses, participation in embedded tutoring programs and Peer Mentoring, close relationship to counseling, and a focus on equity. Participation in and leading Professional Development training and opportunities in the college is also an important practice in the Chemistry Department. Many faculty within the department are actively involved in leadership positions on campus to participate in shared governance.

If applicable, describe any major curricular or service changes your unit has engaged in and the impact of those changes since the last comprehensive review.

Please see Discussion of Accelerated Chemistry 200 in the Course Data Section.

If applicable, describe the impact of any new resources (human, fiscal, etc) on the unit and/or action plan implementation.

Need for New Faculty

The goal of the Chemistry Department has been to provide equitable quality education in a student centered and positive learning environment. To this end, the Department has taken leadership roles and participated in many events and programs to help students feel welcomed and supported. We have pivoted in so many ways and always worked as a team to provide quality learning for our students. These transitions required constant re-writing and adjusting of course materials and countless hours of work from our faculty. The goal of the Chemistry Department has been to provide equitable quality education in a student centered and positive learning environment. It is our belief that our department needs one additional full time faculty member to join our team of educators. We need an equity minded General Chemistry instructor with a strong analytical and thermodynamics background that leans towards physics/engineering. This is for reasons that will be explained in this narrative. In addition, we would like a faculty member that has an interest in forming partnerships with outside institutions and bringing research collaborations with four year colleges and universities.

The Chairs and Senior faculty of the Chemistry Department are excellent new faculty mentors. We assign each new faculty a mentor who works with them throughout their tenure process. Additionally, the department works to maintain a supportive, nurturing space for all department faculty. This has led to two of our tenure track faculty recently being tenured, and our most recent faculty hire being quickly integrated into the department activities and comradery. This requires regular meetings, as well as constant office/hallway discussion of everything from activity organization, to teaching techniques, to course content and pacing. It is a constant and regular part of our days for new, as well as senior faculty. It is what makes our department run so well and how we can easily integrate a new contract faculty members into the mix.

We are requesting one more full time faculty member and our data shows that we are able to justify this request. One of our full time faculty members will be retiring by Dec. 2023 and at least one more by Spring 2024. Mr. Fremland will be officially retired as of December 2023. He is an integral part of our General Chemistry sequence in particular Chemistry 152. As this program review discussed above, General Chemistry track, in particular, Chem 152 is most impacted by AB 705, and the other educational policies. Chemistry 152 and Chem 200 are considered the gateway courses to STEM because they are required for other majors such as Biology and Engineering. Our department has worked tirelessly to help students through the supportive student-facing interventions described in the excellence section below. This includes participation in Path to Stem Success, HSI E-3 Grant projects, STEM Success Days, and Peer Mentoring/Faculty Workshops. We need one full time faculty member that will focus exclusively on General Chemistry.

There are two major projects that justify the additional full time contract faculty.

One is the Chemistry 200 Acceleration that will eliminate barriers to General Chemistry and supports timely completion of educational goals. This project focuses on improving instructional effectiveness with a gateway

Summary and Reflection

STEM course. This is a data driven project that shows success in general chemistry if the student has completed pre-calculus (Math 121+). This change will require curriculum changes, discussion at District level, and support course curriculum. It has the potential to save many students 3.5 units. There is a contract faculty member leading these efforts who is also department chair, but this is a many year long process that needs a dedicated full time general chemistry professor. It is a goal for the department to analyze the data from this project next Program Review Cycle.

The second is adjusting curriculum to adjust for AB 705. Chemistry requires specific math skills upon entering our General Chemistry or Allied Health pathways. Because of changes in math prerequisites, our department will have to adjust curriculum and work tightly with the math department to continue to provide quality chemistry education. This will require additional full time faculty members in our department. Department Chairs are working with Math Chairs and Dean to understand more fully what the legislation is requiring and the impact it will have on STEM majors. This conversation is occurring through chemistry departments' heavy involvement in the HSI Curriculum Work Group through the E-3 HSI Grant.

If you assess OUTCOMES, please confirm that the outcomes have been reviewed for accuracy. If you do not assess Outcomes, skip this question.

Reviewed & Accurate

Related Documents for Charts and Graphs

[Chemistry Program Review Fall 2023.pdf](#)

Executive Summary Complete

Yes

Data Reflection

Trends observed in program/service area's data.

Analysis of Enrollment Trends

The Data dashboards used for this data is Mesa College Course Outcomes Dashboards

The enrollments have changed over time (Table 1). Since last Program Review focused on pandemic teaching and trend, the goal of this Program Review will be to discuss changes to enrollment and success rates pre-pandemic face to face average of Sp '18, Fall '18, Sp '19, and Fall '19 compared to face to face Fall '21 and Spring '22. Fall 2022 and Spring 2023 are included with enrollments. This report will exclude semesters that were discussed in last year's Program Review.

PLEASE NOTE THAT THE COMPLETE DOCUMENT WITH GRAPHS WAS UPLOADED AS A pdf.

**TABLE 1-ENROLLMENT BY SEMESTER

Enrollment had dropped post pandemic which was consistent with local, State, and National trends in community college enrollment. For example, there was approximately a 30% enrollment drop from Fall '18 to Fall '21. (Table 1). However, now the trend is reversing and our enrollments are rising. This Fall 2023 has 2253 enrollments across 76 sections compared to Fall 2022 with 1979 enrollments, a 14% increase. All 76 of those sections are held completely on campus. We saw a significant drop in enrollment in F21/S22 when we brought the majority of our classes back to campus. We have seen a consistent increase since then, although we are still below Fall 2019 by 16%. Our department prides itself on excellence in managing enrollment. Our fill rates exceeded 93+% over the last year. This Fall 2023, our department is at a 96% fill rate.

The trends in Success Rates Disaggregated by Ethnicity in Chemistry are listed in Table 2. Note that the

Summary and Reflection

percentage of students enrolled in our course

**Table 2 attached below.

Overall trends for Fall 2022-Spring 2023

-Overall chemistry success rates match or exceed college success rate. Fall '22 was a 76% success compared to the 75% success rate of the college. Spring 23 was a 78% success rate compared to a 75% college success rate. This overall success rate is similar to pre-pandemic success rates.

-White and Asian students exceed the overall chemistry success rates in all the semesters shown in Table 2. The percentage of White (~25%) and Asian (11%) students is fairly consistent among all the semesters.

-Latinx students represent a consistent percentage (~37%) of our students. This is lower, but similar to the campus representation of Latinx students (~40%).

-Latinx student success rates tend to be fairly consistent between semesters, but lower than the average overall success rates. There is an equity gap. This gap and interventions will be discussed further in the next section.

-Black/African American students represent a very small percentage of our total student demographic. The percentage (~3% average) is lower than the campus representation (6%). This underrepresentation of Black/African American students will be discussed further in the next section. Black/African American student success rates in chemistry tend to fluctuate. The small number of Black/African American students in our classes makes it difficult to discuss trends. Fluctuations in drops will significantly affect the overall success rates.

-Spring 2023 saw the highest success rate for Black/African American students in the last 8 semesters analyzed.

Describe any equity gaps in the data. Are there differences and/or patterns observed by demographics (e.g. race/ethnicity, gender, age, etc.)

Student Success Rates at Course Level

Mesa College Data Dashboard for the department overall shows a similar success rate to the overall campus success rates taking into account data from face to face semesters F21-Sp 22 (73%). This includes the courses Chem 100, 103, 130, 160 (Allied Health and Nutrition track), General Chemistry (152, 200, 201 track), and Organic Chemistry (231, 233). An equity gap exists with Latinx students having an overall success rate of 66%.

Equity gaps are most prevalent in two of the three General Chemistry classes (Chem 152, 200) and Organic Chemistry (Chem 231). The General Chemistry courses consistently reflect the percentage of Latinx students at the college which is ~37%, the data that will be discussed is a comparison of Latinx and white student success rates. Please note that Asian success rates match or slightly exceed white student success rates (Table 2).

At the course level, discussions of Black/African American success rates become difficult due to the small numbers of students. In most classes after Chemistry 200, the numbers do not allow for the statistics to be recorded on the dashboards. Small changes in enrollments lead to large changes to success rates due to small numbers of students.

Note: This discussion will focus on Comparing Fall 21 and Spring 22 to previous on campus semesters (Sp 18, F 18, Sp 19, and F19).

Success Rates in General Chemistry

General Chemistry is defined as the pathway of courses of Chemistry 152, 200, 201 that is part of the curriculum for most science majors: Biology, Chemistry, and Engineering (some programs only require Chem 200).

Chemistry 152: Preparation for General Chemistry

Graph 1 shows an equity gap for Latinx students of -7% for Fall '22 and an equity gap of -9 for Sp '23 that is consistent with pre-pandemic equity gaps.

Summary and Reflection

Despite our best efforts, educational trends and legislation are making strides for lowering equity difficult. As science educators, we would be remiss to not discuss the impacts of AB 705 from the perspective of science education. AB 705 removed Intermediate Algebra from our course offerings at community colleges. Mesa College phased out Math 96 and there are currently no sections being offered. Support Course Models “x” classes to refresh material is the model being implemented. Returning students (adult learners, veterans, single mothers) that may have for a multitude of reasons chosen to take Math 96 are not allowed the choice to take an algebra course.

The effect of AB 705 implementation has not been properly vetted State wide in terms of the effects on science success rates. Physics and chemistry are required courses for Biology and Engineering Majors (top majors) and these subjects rely on strong algebraic abilities. There is a fluency in mathematics knowledge required for science courses. Data shows that students' ability to successfully complete chemistry and physics courses is linked to their math levels. The important connection between math knowledge and science courses' success rates was not taken into account with the legislation.

The prerequisite for Chemistry 152 is Math 96 or M50. However, due to AB 705, most students are clearing the M50 level and can register for Chem 152 without actually being prepared with the algebra skills needed for the course. From data provided by IE, many students are taking Math 116, 104, or 119 concurrently with Chemistry 152. However, students may not have the algebra skills. Students can clear M50 with three years of high school math (IM 1, 2, and 3). It also means that a student can potentially take Chemistry 152 without having had math in high school senior year. Many students enrolling at Mesa are not coming directly from high school. So, recency of math is undoubtedly an issue. Many may clear M50 without having any recent recollection of algebra.

Chemistry 200 General Chemistry I

Graph 2 shows success rate data disaggregated for Latinx and White students for Chemistry 200 shows a solid success rate for general chemistry- 78% (Sp '23) and 71% (F '22).

The equity gaps between Latinx students and White students varies from each semester. However, Fall '22 and Sp '23 show wider gaps of -15 & -19.

However, there is a positive trend. As discussed in the last program review, Latinx students' success rates were most affected by the pandemic with a low point in Sp '22. Latinx students' success rates have improved since then and match pre-pandemic success rates. There is still a significant equity gap when compared to white students.

Accelerated Chemistry 200

As one important part of our contribution to the HSI Equity, Excellence, and Exito, Dr. Budzynski developed a course aimed to accelerate students and lower unit requirements thereby saving students time and money. Chem 200 is General Chemistry I Lecture (3 units) with a Chem 200L coreq (2 unit lab). Chem 152/L prereq (3 + 1 = 4 units) or pass Challenge Exam is the prerequisite. Chem 200 is required for many STEM majors: Chem, Biol, Phys, Enge, and Kinesiology.

In Accelerated Chem 200, students who have passed Math 121 or higher can skip Chem 152/L. Chem 20 is the support class coreq (0.5 units) and Chem 200L coreq is a unit. This saves them 3.5 units.

In Fall 22 + Spring 23, the department offered one section each semester; mixed class with non-Acc students. There were a total of 36 Acc Chem 200 students. Approximately half were Enge majors and a quarter Biology majors. The success rate 75% (Average overall Chem 200 success rate is 70%). Acc Chem 200 Demographics: 31% Asian, 19% Latinx, 39% White? while overall Chem 200 is 15% Asian, 36% Latinx, 31% White?.

More data analysis will follow this year as more data will be collected by having more students complete the course and expanding course offerings in Spring '24. This will require one more full time faculty member (see need for new hire section).

Chemistry 201

Summary and Reflection

The data from Chemistry 201 is shown in Graph 3. In Fall '21 there were no equity gaps between White and Latinx students which is great news. In Spring '22, the equity gap was 4% but Latinx students' success rate was the same as the overall average. The data also shows that F '21 and Sp '22 had higher overall success rates than F '19. The overall success is slightly lower than Sp '18, F '18, and Sp '19, but the equity gaps are significantly better.

Fall '22 shows what is hopefully an anomalous semester. The overall success rate matched the college success rate 72%. But the Latinx students only had a 55% success rate compared to 77% for the white students. Spring '23 showed a high success rate of 85% with white students having a success rate of 97% compared to Latinx students at 77%.

There is not an explanation to this data and more analysis will come next program review.

Organic Chemistry-Chemistry 231

Organic Chemistry is a course that is taken by most biology and all chemistry majors. Our program is smaller than General Chemistry. Graph 4 shows an increase in success rates for overall success rates, success rates for white and Latinx students in Chem 231 in Spring '23. In Fall '22, there was no data for Latinx students meaning that the number was lower than 10 students. The organic chemistry program appears to be strengthening and this is in part due to expanding our team to two devoted Organic Chemistry professors (Saidane & Chang). Our new tenure track professor, Dr. Chang, has certainly been an excellent addition to our program.

Chemistry 233

The success rate for Chem 233 for Fall 2022 is 65% and for Spring '23 was 90% compared to 77% in average of Sp 18, F 18, Sp 19, & F19. There is clearly not an overarching trend. There are not enough enrollments ~20 each semester to disaggregate the data.

Success Rates in Allied Health Track

The following Table 7 shows a comparison of the Allied Health Courses:

All of the courses in our Allied Health Track exceed the overall college success rates in Fall '22 and Spring '23.

Chemistry 100 has an equity gap. Latinx students have a 65% success rate in Chemistry 100 in Spring '23 vs. 85% success rates for white students. Latinx students have a 81% success rate in Chemistry 100 in Fall '22 vs. 90% success rates for white students. Disaggregation of the remainder of the courses is not available due to lack of number of students.

General Education Course-Chem 111

This course has a high success rate of Fall 2022 (75%) and Spring '23 (79%) which is slightly lower than the average success rate of 83% in Sp 18, F18, Sp 19, F19. This course is a great course to promote sustainability. Please see the Sustainability section of this document.

Laboratory Courses

Chemistry courses have co-requisites that provide hands-on and active learning to supplement the lecture. Chemistry lab provides a way of visualizing abstract concepts in a physical way.

In addition, students are encouraged to discuss their data as a class. In appropriate cases, they work in small groups. Laboratory is a way is a fantastic way to foster camaraderie among students and professors. Our success rates in all laboratory courses exceed college success rates (Table 8).

Describe the discussion(s) that took place about the unit's learning outcomes assessment data.

Course Outcomes Assessment Data:

Summary and Reflection

This was discussed at CLO Department Meetings and Department Meetings in Spring 2022, Fall 2021, and Spring 2023.

Planning for next year has started.

Most likely we will continue similar evaluations for our courses and programs as was done in previous years. This includes:

- Measurements and Chemical Calculations
- Atoms and Compounds
- Structure and Properties
- Chemical Reactions
- Nomenclature

Program Outcomes focus on the following areas:

Note: Program is defined as General Chemistry (152-200-201)

Critical Thinking

Communication

Personal Responsibility

? For the lecture courses:

? Questions were given to students as part of an exam.

? Results were collected and evaluated to see if the benchmark was met.

? For the lab courses

? Grade the materials, safety, and procedures of one experiment for each course.

? Results were collected, evaluated to see if the benchmark was met.

For the lecture courses: 70% of correct answers

For the lab courses: 70% of correct answers

For the lecture courses Benchmark met.

Chem 152 (71.4%) , Chem 200 (74.1%), Chem 201 (80%)

For the lab courses Benchmark met.

Chem 152L (85%) , Chem 200L (86%), Chem 201L (84%)

Target met and exceeded for all the courses.

Related Documents for Charts and Graphs

[TABLE 1.docx](#)

[TABLE 2.docx](#)

[GRAPH 1.docx](#)

[GRAPH 2.docx](#)

[GRAPH 3.docx](#)

[GRAPH 4.docx](#)

[GRAPH 5.docx](#)

[GRAPH 6.docx](#)

[GRAPH 7.docx](#)

[TABLE 7.docx](#)

[TABLE 8.docx](#)

Data Reflection Complete

Yes

Summary and Reflection

Practice Reflection

Describe current practices your program/service area has engaged in that you believe impact the above data trends and equity gaps.

Program Involvement & Best Practices

This academic year of Fall 2022-Spring 2023 and in light of the “post” pandemic learning and teaching obstacles, the Department has put all its efforts to provide as much support as possible to students in numerous ways. Our department is extremely active in participatory governance, campus wide committees, and the HSI Equity, Excellence, and Exito (E-3) Grant. We support high quality and culturally relevant curriculum as part of every day teaching. Many of our contract faculty members support Honors Contracts that allow students to make relevant connections to important research.

The Curriculum Work Group HSI E-3 Grant has five Chemistry full time faculty who have taken initiative in participating in the HSI Excellence, Equity, and Exito since Fall 2021. This is interdisciplinary work focusing on the elimination of barriers and to provide support for students entering Mesa College. We are collaborating heavily with the faculty from physics, math, engineering, and biology. This has led to many projects that will require a faculty lead to institutionalize a significant overhaul of General Chemistry.

The work group is discussing how AB 1705 will affect science courses. AB 1705 seeks to further remove choices for students to select the appropriate math journeys. Currently, Mesa course offerings offer students a wide variety of entrance points into mathematics and include both non-support and support options: Math 116/Math 116x (College Algebra and Matrix), Math 104/104x Trigonometry, and Math 141/141x Precalculus. Students have choices in their math journey. AB 1705 legislation seeks to validate the need for any course including transfer level courses such as Precalculus (Math 141) by Fall 2025. Mesa STEM faculty are extremely concerned that the validation process at the state level is not transparent and many questions remain on validation studies. The validation process currently used on validating precalculus for business majors would be flawed if the same approach is used for validating precalculus for STEM majors. In addition, if validation is not shown, the most strict interpretation places ALL students in calculus. We support students with four years of math being able to register into Calculus without any barriers. We strongly oppose forcing ALL entering community college students into Calculus.

Students with two or three years of high school math should have the choice to take a one semester Precalculus course. Returning students, in particular Veterans that are adult students, should have the choice to take a one semester Precalculus course. Community college students should have the same options as University of California, California State University, and California High Schools students who will be able to teach Pre-Calculus. The double standard of not allowing community college students to take a precalculus is inequitable.

In addition, the use of support course models for Calculus fails to meet common sense and learning theory pedagogy. Teaching Calculus with a support course involves 6-8 hours a week of Calculus lecture + support (lab). Algebra, trigonometry, and precalculus are introduced while teaching Calculus. This places an undue burden on students and faculty. In addition, for students with less math preparation, students are not reviewing or refreshing information.

Important questions from Mesa Chemistry remain. Since most students begin their path with Chem 152 and Math.

How will working students be able to register for other courses if the time and unit demand is so high for Calculus?

Will Latino students be most impacted by the legislation?

How will this affect our enrollment of Latino students in our pathways?

*STEM Success Days Lead: Ms. Moore Interdisciplinary celebration of students. Two day event that brought in games, food, four year colleges, and “Wall of Fame”. UCSD and SDSU representatives attend.

Summary and Reflection

*Peer Mentoring Lead: Dr. Chang Fall '19-present Chemistry has been actively involved in the Peer Mentoring Program. We have had two Peer Mentors over the last year. We continue to encourage students in General Chemistry to attend.

*Participation in Classroom Tutoring Program: Chemistry 100 instructors (Ms. Moore, Mr. Fremland, & Dr. Gustin) participated in mentoring classroom tutors. This is a great way of providing more support for students.

*Path to STEM Success: Dr. Fusco Hernandez In Summer 2022, this was a four day event welcoming students to STEM at Mesa College. In Intercession 2023, this was a two event with 40 participants. It has received much positive feedback and campus accolades. This program continues to grow under her leadership.

*Enrollment Management-Campus Involvement

Chemistry has taken an active role in participating in campus efforts to write an Enrollment Management Plan. Our department sees equity in the details especially in providing a reliable and managed schedule with minimal cancellations. Dr. Budzynski is the lead faculty member in this campus wide effort. Other chemistry faculty are the co-leads in the subgroups and these include. Dr. Paula Gustin as a faculty co-lead in the Innovation and Partnership Work Group. Ms. Danica Moore is the faculty co-lead in the Communication and Marketing. Dr. Chang, Dr. Hernandez, and Dr. Sardo also participated in the subgroups.

*Participation in Campus Wide Registration Days.

This work was done by Dr. Budzynski, Dr. Fusco Hernandez, Dr. Gustin, and Ms. Moore. Chemistry participated and coordinated with counseling in Registration Workshops (two different ones) and Financial Aid Workshop. These are great ways to informally help students and work with counselors (P. Rodriguez and G. Adona) and other STEM departments to answer questions regarding courses.

*Faculty Led Workshops Lead: Dr. Sardo/Dr. Gustin Fall 2022: These workshops were funded in response to student success data and observations from 2021-2022. Students were struggling in post pandemic courses. Total 27 sessions, 196 total visits = 7.3 students on average per session.

* Study Jams Lead: Dr. Fusco Hernandez Fall 2022 Interdisciplinary study time with faculty where students can attend before midterms and finals.

*Caffeine with Chemistry Lead: Ms Moore Fall 2022 This has been in response to the college feeling lifeless due to college being online. Caffeine with Chem was a way of creating a positive space where students can have coffee with professors. This has been very successful.

*ACS Chem Club Lead: Dr. Chang Fall 2022 Dr. Chang resurrected the American Chemistry Society Chemistry Club. It had 40+ members! This was a great way of providing students with an in person collaboration and a place of belonging in STEM. Collaborations are campus wide with such areas as Fashion.

*Lab Redesign: Many laboratory manuals have been updated or redesigned in Chem 100L, 152L, 231L, 233L and 103. Thanks to Dr. Fusco Hernandez, Ms. Moore, Dr. Saidane, and Dr. Sardo

*Sustainability

Our students show a strong interest in environmental issues and sustainability and our department has an environmentally focused curriculum in many courses. Our Chemistry 111/111L which discusses climate change, water and air pollution, and the disproportionate impact on communities of color. Many of our laboratory courses-Chem 200L and 201L- which serve our STEM majors of engineering and biology have laboratory analysis that is related to the environment. This is particularly focused on water pollution. There has also been an active effort on the part of our six Lab Coordinators to participate in Green Chemistry Lab Redesign to reduce chemical usage, and substitute more environmentally friendly chemicals into experiments where possible. New faculty can develop a new curriculum for Chem 200/20 that expands on environmental themes, as well as help in this development for other courses, workshops, and even work with our departments. The Allied Health track courses (Chem 100, 130, 103, 160) also have a curriculum module which discusses climate issues with respect to

Summary and Reflection

healthcare issues and racial inequities. Chemistry faculty (Mr. Fremland, Dr. Paula Gustin) have been involved with the campus efforts led by the Environmental Sustainability Committee by participating in their Climate Literacy Survey. This semester (Dr. Budzynski and Dr. Paula Gustin) have agreed to join the faculty workshops in the hopes of obtaining a LEAF designation on the course outline of record for Chem 111/111L. In addition, we have worked with the English Department faculty (Ranmali Rodrigo and Robert Pickford) and Chairs (Jill Moreno Ikari and Chris Sullivan) to form an interdisciplinary work group that we affectionately call STEMGLISH. This group worked collaboratively to not only have climate and healthcare focused topics for the English 101 class, but also to schedule one section in the STEM building and to actively encourage chemistry student enrollment in these English courses. It is part of our department's commitment to educating students regarding climate action and responsible stewardship.

What other factors (internal or external) might also impact the above data trends and equity gaps?

This was addressed earlier in document:

The main consensus was that the source of this anomaly was that this semester started remotely for three weeks due to the Omicron wave. Faculty discussed how this completely changed the dynamics of the class as the first three weeks tend to focus on unit conversions which are foundations to the rest of the course. This remote period is most likely the cause of this unusually low success rate data.

There is also the major effect of AB 705. The prerequisite for Chemistry 152 is Math 96 or M50. However, due to AB 705, most students are clearing the M50 level and can register for Chem 152 without being prepared with the algebra skills needed for the course. From data provided by IE, many students are taking Math 116, 104, or 119 concurrently with Chemistry 152. However, students may not have the algebra skills. Students can clear M50 with three years of high school math (IM 1, 2, and 3). It also means that a student can potentially take Chemistry 152 without having had math in high school senior year. Many students enrolling at Mesa are not coming directly from high school. So, recency of math is undoubtedly an issue. Many may clear M50 without having any recent recollection of algebra.

In addition, students in Fall 2021 and Spring 2022 would have been in online coursework in high school. There have been many articles published regarding the negative impact online learning had on skills in math.

<https://www.nasbe.org/the-impact-of-covid-19-on-math-achievement/>

These are believed to be the factors in our Fall '21 and Sp '22 academic year.

Related Documents for Charts and Graphs

Practice Reflection Complete

Yes

Mid-Cycle Updates

Are there any edits or updates to the Executive Summary above?

Currently, there are 10 full time faculty members and 18 adjuncts in the department. Adjunct FTEF is 9.0 for Fall 2023 which is 46% of our total FTEF. There are four Instructional Laboratory Technicians. Our fill rate for Fall 2023 is 96%, with a productivity (FTES/FTEF) of 14.5. The department is hiring a full time tenure track professor for Analytical Chemistry to start in Spring 2024. We are requesting one full time faculty member for General Chemistry track. See justification in resource page.

Are there any edits or updates to the Data Reflection above?

There were some updates with success rate trends for Fall '22 and Spring '23.

PLEASE NOTE THAT THE COMPLETE DOCUMENT WAS UPLOADED AS A pdf in nuventive titled "Chemistry Program Review Fall 2023". This is the documents folder. Please see pdf for graphs.

It can also be viewed at the following link:

<https://docs.google.com/document/d/1h97MI3IFiWzW1WDSMAiHUIslcpPzTD6z4evO-KRX94Q/edit>

Summary and Reflection

Mesa College Data Dashboard for the department overall shows a similar success rate to the overall campus success rates taking into account data from face to face semesters F21-Sp 22 (73%). This includes the courses Chem 100, 103, 130, 160 (Allied Health and Nutrition track), General Chemistry (152, 200, 201 track), and Organic Chemistry (231, 233). An equity gap exists with Latinx students having an overall success rate of 66%.

Equity gaps are most prevalent in two of the three General Chemistry classes (Chem 152, 200) and Organic Chemistry (Chem 231). The General Chemistry courses consistently reflect the percentage of Latinx students at the college which is ~37%, the data that will be discussed is a comparison of Latinx and white student success rates. Please note that Asian success rates match or slightly exceed white student success rates (Table 2).

At the course level, discussions of Black/African American success rates become difficult due to the small numbers of students. In most classes after Chemistry 200, the numbers do not allow for the statistics to be recorded on the dashboards. Small changes in enrollments lead to large changes to success rates due to small numbers of students.

Note: This discussion will focus on Comparing Fall 21 and Spring 22 to previous on campus semesters (Sp 18, F 18, Sp 19, and F19).

Success Rates in General Chemistry

General Chemistry is defined as the pathway of courses of Chemistry 152?200? 201 that is part of the curriculum for most science majors: Biology, Chemistry, and Engineering (some programs only require Chem 200).

Chemistry 152: Preparation for General Chemistry

Graph 1 shows an equity gap for Latinx students of -7% for Fall '22 and an equity gap of -9 for Sp '23 that is consistent with pre-pandemic equity gaps.

Despite our best efforts, educational trends and legislation are making strides for lowering equity difficult. As science educators, we would be remiss to not discuss the impacts of AB 705 from the perspective of science education. AB 705 removed Intermediate Algebra from our course offerings at community colleges. Mesa College phased out Math 96 and there are currently no sections being offered. Support Course Models "x" classes to refresh material is the model being implemented. Returning students (adult learners, veterans, single mothers) that may have for a multitude of reasons chosen to take Math 96 are not allowed the choice to take an algebra course.

The effect of AB 705 implementation has not been properly vetted State wide in terms of the effects on science success rates. Physics and chemistry are required courses for Biology and Engineering Majors (top majors) and these subjects rely on strong algebraic abilities. There is a fluency in mathematics knowledge required for science courses. Data shows that students' ability to successfully complete chemistry and physics courses is linked to their math levels. The important connection between math knowledge and science courses' success rates was not taken into account with the legislation.

The prerequisite for Chemistry 152 is Math 96 or M50. However, due to AB 705, most students are clearing the M50 level and can register for Chem 152 without actually being prepared with the algebra skills needed for the course. From data provided by IE, many students are taking Math 116, 104, or 119 concurrently with Chemistry 152. However, students may not have the algebra skills. Students can clear M50 with three years of high school math (IM 1, 2, and 3). It also means that a student can potentially take Chemistry 152 without having had math in high school senior year. Many students enrolling at Mesa are not coming directly from high school. So, recency of math is undoubtedly an issue. Many may clear M50 without having any recent recollection of algebra.

Chemistry 200 General Chemistry I

Graph 2 shows success rate data disaggregated for Latinx and White students for Chemistry 200 shows a solid success rate for general chemistry- 78% (Sp '23) and 71% (F '22).

The equity gaps between Latinx students and White students varies from each semester. However, Fall '22 and Sp '23 show wider gaps of -15 & -19.

Summary and Reflection

However, there is a positive trend. As discussed in the last program review, Latinx students' success rates were most affected by the pandemic with a low point in Sp '22. Latinx students' success rates have improved since then and match pre-pandemic success rates. There is still a significant equity gap when compared to white students.

Accelerated Chemistry 200

As one important part of our contribution to the HSI Equity, Excellence, and Exito, Dr. Budzynski developed a course aimed to accelerate students and lower unit requirements thereby saving students time and money. Chem 200 is General Chemistry I Lecture (3 units) with a Chem 200L coreq (2 unit lab). Chem 152/L prereq (3 + 1 = 4 units) or pass Challenge Exam is the prerequisite. Chem 200 is required for many STEM majors: Chem, Biol, Phys, Enge, and Kinesiology.

In Accelerated Chem 200, students who have passed Math 121 or higher can skip Chem 152/L. Chem 20 is the support class coreq (0.5 units) and Chem 200L corequisite. This saves them 3.5 units.

In Fall 22 + Spring 23, the department offered one section each semester; mixed class with non-Acc students. There were a total of 36 Acc Chem 200 students. Approximately half were Enge majors and a quarter Biology majors. The success rate 75% (Average overall Chem 200 success rate is 70%). Acc Chem 200 Demographics: 31% Asian, 19% Latinx, 39% White while overall Chem 200 is 15% Asian, 36% Latinx, 31% White.

More data analysis will follow this year as more data will be collected by having more students complete the course and expanding course offerings in Spring '24. This will require one more full time faculty member (see need for new hire section).

Chemistry 201

The data from Chemistry 201 is shown in Graph 3. In Fall '21 there were no equity gaps between White and Latinx students which is great news. In Spring '22, the equity gap was 4% but Latinx students' success rate was the same as the overall average. The data also shows that F '21 and Sp '22 had higher overall success rates than F '19. The overall success is slightly lower than Sp '18, F '18, and Sp '19, but the equity gaps are significantly better.

Fall '22 shows what is hopefully an anomalous semester. The overall success rate matched the college success rate 72%. But the Latinx students only had a 55% success rate compared to 77% for the white students. Spring '23 showed a high success rate of 85% with white students having a success rate of 97% compared to Latinx students at 77%.

There is not an explanation to this data and more analysis will come next program review.

Organic Chemistry-Chemistry 231

Organic Chemistry is a course that is taken by most biology and all chemistry majors. Our program is smaller than General Chemistry. Graph 4 shows an increase in success rates for overall success rates, success rates for white and Latinx students in Chem 231 in Spring '23. In Fall '22, there was no data for Latinx students meaning that the number was lower than 10 students. The organic chemistry program appears to be strengthening and this is in part due to expanding our team to two devoted Organic Chemistry professors (Saidane & Chang). Our new tenure track professor, Dr. Chang, has certainly been an excellent addition to our program.

Chemistry 233

The success rate for Chem 233 for Fall 2022 is 65% and for Spring '23 was 90% compared to 77% in average of Sp 18, F 18, Sp 19, & F19. There is clearly not an overarching trend. There are not enough enrollments ~20 each semester to disaggregate the data.

Success Rates in Allied Health Track

Summary and Reflection

The following Table 7 shows a comparison of the Allied Health Courses:

All of the courses in our Allied Health Track exceed the overall college success rates in Fall '22 and Spring '23.

Chemistry 100 has an equity gap. Latinx students have a 65% success rate in Chemistry 100 in Spring '23 vs. 85% success rates for white students. Latinx students have a 81% success rate in Chemistry 100 in Fall '22 vs. 90% success rates for white students. Disaggregation of the remainder of the courses is not available due to lack of number of students.

General Education Course-Chem 111

This course has a high success rate of Fall 2022 (75%) and Spring '23 (79%) which is slightly lower than the average success rate of 83% in Sp 18, F18, Sp 19, F19. This course is a great course to promote sustainability. Please see the Sustainability section of this document.

Laboratory Courses

Chemistry courses have co-requisites that provide hands-on and active learning to supplement the lecture. Chemistry lab provides a way of visualizing abstract concepts in a physical way.

In addition, students are encouraged to discuss their data as a class. In appropriate cases, they work in small groups. Laboratory is a way is a fantastic way to foster camaraderie among students and professors. Our success rates in all laboratory courses exceed college success rates (Table 8).

Are there any edits or updates to the Practice Reflection above?

Significant Impacts of AB 1705

This academic year of Fall 2022-Spring 2023 and in light of the “post” pandemic learning and teaching obstacles, the Department has put all its efforts to provide as much support as possible to students in numerous ways. Our department is extremely active in participatory governance, campus wide committees, and the HSI Equity, Excellence, and Exito (E-3) Grant. We support high quality and culturally relevant curriculum as part of every day teaching. Many of our contract faculty members support Honors Contracts that allow students to make relevant connections to important research.

The Curriculum Work Group HSI E-3 Grant has five Chemistry full time faculty who have taken initiative in participating in the HSI Excellence, Equity, and Exito since Fall 2021. This is interdisciplinary work focusing on the elimination of barriers and to provide support for students entering Mesa College. We are collaborating heavily with the faculty from physics, math, engineering, and biology. This has led to many projects that will require a faculty lead to institutionalize a significant overhaul of General Chemistry.

The work group is discussing how AB 1705 will affect science courses. AB 1705 seeks to further remove choices for students to select the appropriate math journeys. Currently, Mesa course offerings offer students a wide variety of entrance points into mathematics and include both non-support and support options: Math 116/Math 116x (College Algebra and Matrix), Math 104/104x Trigonometry, and Math 141/141x Precalculus. Students have choices in their math journey. AB 1705 legislation seeks to validate the need for any course including transfer level courses such as Precalculus (Math 141) by Fall 2025. Mesa STEM faculty are extremely concerned that the validation process at the state level is not transparent and many questions remain on validation studies. The validation process currently used on validating precalculus for business majors would be flawed if the same approach is used for validating precalculus for STEM majors. In addition, if validation is not shown, the most strict interpretation places ALL students in calculus. We support students with four years of math being able to register into Calculus without any barriers. We strongly oppose forcing ALL entering community college students into

Summary and Reflection

Calculus.

Students with two or three years of high school math should have the choice to take a one semester Precalculus course. Returning students, in particular Veterans that are adult students, should have the choice to take a one semester Precalculus course. Community college students should have the same options as University of California, California State University, and California High Schools students who will be able to teach Pre-Calculus. The double standard of not allowing community college students to take a precalculus is inequitable.

In addition, the use of support course models for Calculus fails to meet common sense and learning theory pedagogy. Teaching Calculus with a support course involves 6-8 hours a week of Calculus lecture + support (lab). Algebra, trigonometry, and precalculus are introduced while teaching Calculus. This places an undue burden on students and faculty. In addition, for students with less math preparation, students are not reviewing or refreshing information.

Important questions from Mesa Chemistry remain. Since most students begin their path with Chem 152 and Math.

How will working students be able to register for other courses if the time and unit demand is so high for Calculus?

Will Latino students be most impacted by the legislation?

How will this affect our enrollment of Latino students in our pathways?

Summary and Reflection

Goal 1: Continued involvement and leadership in the HSI Equity, Excellence, and Exito Grant.

Unit Goal: Goal 1: Continued involvement and leadership in the HSI Equity, Excellence, and Exito Grant. Currently, five chemistry faculty are heavily involved in the grant. Dr. Fusco Hernandez is the PI, Dr. Paula Gustin is the faculty chair of the Curriculum Work Group, Dr. Budzynski is the chair of the Classroom Redesign Project. We intend on being active in STEM Curriculum Alignment Projects, Curriculum Maps, and AB 1705 discussions.

Goal Status: Active

Beginning Year: 2022 - 2023

Projected Completion Year: 2025 - 2026

Mapping

Mesa College Strategic Plan: Roadmap to Mesa2030: (X - Highlight the X to Align)

- Community - Objective 1: X
- Community - Objective 2: X
- Community - Objective 3: X
- Community - Objective 4: X
- Community - Objective 5: X
- Completion - Objective 1: X
- Completion - Objective 2: X
- Completion - Objective 3: X
- Completion - Objective 4: X
- Pathways and Partnerships - Objective 1: X
- Pathways and Partnerships - Objective 2: X
- Pathways and Partnerships - Objective 3: X
- Pathways and Partnerships - Objective 4: X
- Pathways and Partnerships - Objective 5: X
- Scholarship - Objective 1: X
- Scholarship - Objective 2: X
- Scholarship - Objective 3: X
- Scholarship - Objective 4: X
- Scholarship - Objective 5: X
- Stewardship - Objective 1: X
- Stewardship - Objective 2: X
- Stewardship - Objective 3: X
- Stewardship - Objective 4: X
- Stewardship - Objective 5: X
- Stewardship - Objective 6: X

Summary and Reflection

Action Plans	Action Plan Update
Action Plan Status: Active Action Plan: Curriculum Alignment Projects, Curriculum Maps, and AB 1705 discussions. Action Plan Cycle: 2022 - 2023, 2023 - 2024, 2024 - 2025, 2025 - 2026	Submission Date: 01/29/2024 Action Plan Update: Active Update Year: 2023 - 2024 Action Plan Progress: On Track
Action Plan Status: Active Action Plan: Path to STEM Success Day & Noche de La Familia Action Plan Cycle: 2022 - 2023, 2023 - 2024, 2024 - 2025, 2025 - 2026	Submission Date: 01/29/2024 Action Plan Update: Active Update Year: 2023 - 2024 Action Plan Progress: Completed

Goal 2: Analyze data from the Acceleration Chemistry 200 Project in the next Program Review Year

Unit Goal: Goal 2: Analyze data from the Acceleration Chemistry 200 Project in the next Program Review Year. General Chemistry faculty are working through the Interdisciplinary STEM Curriculum Writing Group, focusing on pathways for students to accelerate in the General Chemistry path for students with higher math levels. Next cycle there will be enough data to discuss the approach and begin institutionalizing this pathway.

Goal Status: Active

Beginning Year: 2022 - 2023

Projected Completion Year: 2023 - 2024

Mapping

Mesa College Strategic Plan: Roadmap to Mesa2030: (X - Highlight the X to Align)

- Completion - Objective 1: X
- Completion - Objective 2: X
- Completion - Objective 3: X
- Pathways and Partnerships - Objective 1: X
- Pathways and Partnerships - Objective 2: X
- Pathways and Partnerships - Objective 3: X
- Pathways and Partnerships - Objective 4: X
- Pathways and Partnerships - Objective 5: X
- Scholarship - Objective 1: X
- Scholarship - Objective 2: X
- Scholarship - Objective 3: X
- Scholarship - Objective 4: X
- Scholarship - Objective 5: X

Action Plans	Action Plan Update
Action Plan Status: Active	

Summary and Reflection

Action Plans	Action Plan Update
Action Plan: Work with IE to collect data Action Plan Cycle: 2022 - 2023, 2023 - 2024	
Action Plan Status: Active Action Plan: Present data to department and Curriculum Work Group Action Plan Cycle: 2022 - 2023, 2023 - 2024	

Goal 3: Hire one full time faculty- General Chemistry Faculty

Unit Goal: Goal 3: Hire one full time faculty- General Chemistry Faculty. In light of impending retirements and enormous amounts of faculty participation in college, it is critical that we hire one full time faculty for General Chemistry.

Update: One full time faculty-Analytical Chemistry has been hired for Spring 2024. One full time faculty still needed in General Chemistry.

Goal Status: Active

Beginning Year: 2022 - 2023

Projected Completion Year: 2023 - 2024

Mapping

Mesa College Strategic Plan: Roadmap to Mesa2030: (X - Highlight the X to Align)

- Completion - Objective 1: X
- Completion - Objective 2: X
- Completion - Objective 3: X
- Completion - Objective 4: X
- Pathways and Partnerships - Objective 1: X
- Pathways and Partnerships - Objective 2: X
- Pathways and Partnerships - Objective 3: X
- Pathways and Partnerships - Objective 4: X
- Pathways and Partnerships - Objective 5: X
- Scholarship - Objective 1: X
- Scholarship - Objective 2: X
- Scholarship - Objective 3: X
- Scholarship - Objective 4: X
- Scholarship - Objective 5: X
- Stewardship - Objective 1: X
- Stewardship - Objective 2: X
- Stewardship - Objective 3: X
- Stewardship - Objective 4: X
- Stewardship - Objective 5: X

Summary and Reflection

- Stewardship - Objective 6: X

Action Plans	Action Plan Update
Action Plan Status: Active Action Plan: Participate in hiring committee Action Plan Cycle: 2022 - 2023, 2023 - 2024	

Goal 4: Create more student-centered spaces

Unit Goal: Goal 4: Create more student-centered spaces: Under Dr. Budzynski's leadership, we are looking forward to redesigning our computer lab area to be a warm, inviting space for instructor and student interaction. A permanent home for our Caffeine with Chemistry. We would love the vibe of the STEM Center or LOFT.

Goal Status: Active

Beginning Year: 2022 - 2023

Projected Completion Year: 2025 - 2026

Mapping

Mesa College Strategic Plan: Roadmap to Mesa2030: (X - Highlight the X to Align)

- Community - Objective 1: X
- Community - Objective 2: X
- Community - Objective 3: X
- Community - Objective 4: X
- Community - Objective 5: X
- Completion - Objective 2: X
- Completion - Objective 4: X
- Scholarship - Objective 1: X
- Scholarship - Objective 2: X
- Scholarship - Objective 3: X
- Scholarship - Objective 4: X
- Scholarship - Objective 5: X

Action Plans	Action Plan Update
Action Plan Status: Active Action Plan: Participate in STEM classroom redesign. Action Plan Cycle: 2022 - 2023, 2023 - 2024, 2024 - 2025, 2025 - 2026	
Action Plan Status: Active Action Plan: Seek funding for STEM LOFT on Fourth Floor	

Summary and Reflection

Action Plans	Action Plan Update
Action Plan Cycle: 2022 - 2023, 2023 - 2024, 2024 - 2025, 2025 - 2026	

Goal 5: Increase representation of African American students

Unit Goal: The goal of the department will be to seek ways to improve the numbers of African American students in General Chemistry and Organic Chemistry to at least match the 6% representation of the college. One approach is to work more closely with counseling. Recruiting and retaining African American students in STEM will require more community outreach with high schools and working closely with a counseling representative. Actively recruiting for our Chemistry Club may also be a possible venue to support Black/African American students.

Goal Status: Active

Beginning Year: 2022 - 2023

Projected Completion Year: 2025 - 2026

Mapping

Mesa College Strategic Plan: Roadmap to Mesa2030: (X - Highlight the X to Align)

- Community - Objective 1: X
- Community - Objective 2: X
- Community - Objective 3: X
- Community - Objective 4: X
- Community - Objective 5: X
- Completion - Objective 2: X
- Completion - Objective 3: X
- Scholarship - Objective 1: X
- Scholarship - Objective 2: X
- Scholarship - Objective 3: X
- Scholarship - Objective 4: X
- Scholarship - Objective 5: X

Action Plans	Action Plan Update
Action Plan Status: Active Action Plan: Work with Chemistry Club to recruit African American Students Action Plan Cycle: 2022 - 2023, 2023 - 2024, 2024 - 2025, 2025 - 2026	
Action Plan Status: Active Action Plan: Work with counseling/outreach Action Plan Cycle: 2022 - 2023, 2023 - 2024, 2024 - 2025, 2025 - 2026	

Summary and Reflection

Goal 6: Increase Work Based Learning Opportunities for students.

Unit Goal: Working with Ms. Moore (Faculty Work Based Learning STEM Coordinator), we can provide more opportunities for students in the area of work-based learning.

Goal Status: Active

Beginning Year: 2022 - 2023

Projected Completion Year: 2025 - 2026

Mapping

Mesa College Strategic Plan: Roadmap to Mesa2030: (X - Highlight the X to Align)

- Completion - Objective 1: X
- Completion - Objective 3: X
- Pathways and Partnerships - Objective 1: X
- Pathways and Partnerships - Objective 2: X
- Pathways and Partnerships - Objective 3: X
- Pathways and Partnerships - Objective 4: X
- Pathways and Partnerships - Objective 5: X
- Scholarship - Objective 1: X
- Scholarship - Objective 2: X
- Scholarship - Objective 3: X
- Scholarship - Objective 4: X
- Scholarship - Objective 5: X
- Stewardship - Objective 1: X
- Stewardship - Objective 2: X
- Stewardship - Objective 3: X
- Stewardship - Objective 4: X
- Stewardship - Objective 5: X
- Stewardship - Objective 6: X

Action Plans	Action Plan Update
<p>Action Plan Status: Active Action Plan: Regular meetings with our STEM Liaison Action Plan Cycle: 2022 - 2023, 2023 - 2024, 2024 - 2025, 2025 - 2026</p>	
<p>Action Plan Status: Active Action Plan: Communication flow to department from Work Based Learning Action Plan Cycle: 2022 - 2023, 2023 - 2024, 2024 - 2025, 2025 - 2026</p>	

Summary and Reflection

Goal 7: Analyze Enrollment Trends and Latinx Representation in Organic Chemistry

Unit Goal: Goal 7: Analyze Enrollment Trends and Latinx Representation in Organic Chemistry

Survey Chemistry 201 students to learn more about their plans for Organic Chemistry. Are they transferring before taking this class? This will help us to determine enrollment trends and perhaps understand why the Latinx representation is lower in that sequence.

Goal Status: Active

Beginning Year: 2022 - 2023

Projected Completion Year: 2025 - 2026

Mapping

Mesa College Strategic Plan: Roadmap to Mesa2030: (X - Highlight the X to Align)

- Completion - Objective 1: X
- Completion - Objective 3: X
- Pathways and Partnerships - Objective 1: X
- Pathways and Partnerships - Objective 2: X
- Pathways and Partnerships - Objective 3: X
- Pathways and Partnerships - Objective 4: X
- Pathways and Partnerships - Objective 5: X
- Scholarship - Objective 1: X
- Scholarship - Objective 2: X
- Scholarship - Objective 3: X
- Scholarship - Objective 4: X
- Scholarship - Objective 5: X

Action Plans	Action Plan Update
Action Plan Status: Active Action Plan: Write a survey Action Plan Cycle: 2022 - 2023, 2023 - 2024, 2024 - 2025, 2025 - 2026	
Action Plan Status: Active Action Plan: Collect data & report out to department Action Plan Cycle: 2022 - 2023, 2023 - 2024, 2024 - 2025, 2025 - 2026	