SAN DIEGO MESA COLLEGE

Program Review

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

Instructional Program - Engineering (ENGE)

Executive Summary

Describe the successes and challenges your unit has faced since the last comprehensive review.
The Engineering Program is beginning a new era. A new contract faculty member was added to the department in Spring 2023 to help to plan and enact the future of the program. Engineering faculty have been involved in many curricular reforms and updates and have specific future plans to increase enrollment, shrink equity gaps and preserve the health of the program.

In terms of curriculum, Engineering faculty have been meeting with the HSI-STEM E3 curriculum group. The Curriculum Workgroup has been tasked with clarifying STEM pathways. This work has involved aligning content with other STEM disciplines, especially Physics and Math. Engineering faculty have been working with Physics and Math instructors to review math and physics prerequisites to verify that they are appropriate for the Engineering courses. The Engineering program awards Certificate of Achievement, Associate of Arts and Associate of Science degrees. These degrees were updated this past semester to remove MATH 141 since it is being deactivated. At this time, faculty also reviewed the 2-Year pathway to make sure that it was achievable for students. Engineering also took advantage of the transfer of outcomes review to Nueventive to revise their PLO's. The PLO's are more applicable to Engineering and include an objective regarding technology.

In terms of enrollments, Engineering program enrollments are fluctuating but it is mostly indicated an upward trends. Engineering enrollments for the spring 2024 has gone up significantly for all the courses being offered. In the fall of 2023 ENGE 250 had low enrolments, and this is due to the number of engineering students transferring to a four-year institutions.

The engineering workshops has gained popularity among engineering students, the surveys conducted is presented below:

In Spring 2023, 31 students enrolled in, 29 students received a Certificate of Completion. The students who are eligible to receive a Certificate were who; 1) attended 8 or more workshops out of 10; 2) have caught up with Dr. Truong after the workshops if they missed one or two workshops. 29 students received a Certificate of Completion (15 students attended 10 workshops, 9 students attended 9 workshops, 5 students attended 8 workshops and 1 student attended 6 workshops, 1 student attended none).

Here is the students' post-workshop survey result:

https://www.sdmesa.edu/academics/stem/irl/documents/SP23%20IRL%20Robotics%20and%20Programming%20Engineering%20Post%20Workshop%20Survey%20Result.pdf

Mesa Physical Sciences Faculty have also been meeting with faculty and administrators from transfer partners to revise curriculum to make it easier for students to transfer. After a long contentious period, ENGE 151 has been updated and approved to transfer to San Diego State. As part of the agreement, we are updating to Solid Works and including use of our new 3D printers. The 3D printers were purchased from the HSI-STEM E3 grant and are integral to the advancement of the Engineering program. Currently, faculty are learning how to use and best integrate the printers into their curriculum. As a result of meetings with our transfer partners and changes to enrollment at City College, Engineering faculty have decided to activate ENGE 240: Digital Systems. This year, CRC has also approved a new lab course: ENGE 211: Properties of Materials Lab. We hope to develop this lab more fully to offer it in Fall 2024. Finally, our Engineering Workshops, also sponsored by the HSI-STEM E3 grant, continue to be popular with students. We are entering a new phase of the workshops with them being taught by a new faculty member. Students in the workshops increase interest in Engineering and gain valuable skills that enhance transfer and get hired for internships.

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.
No changes

If applicable, describe the impact of any new resources (human, fiscal, etc) on the unit and/or action plan implementation.
No changes

Summary and Reflection

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

Executive Summary Complete
Yes

Data Reflection

Trends observed in program/service area's data.
Enrollment in ENGE courses has dipped since the pandemic as can be seen in the graph at left below (please keep in mind that only Fall and Spring enrollments are shown in the graph). ENGE courses are beginning to rebound but are not at the level that they had been pre-pandemic. We do not think that this enrollment trend is based on modality since the enrollment drop occurred during semesters when courses were still online. However, we have put in petitions for Distance Education online approvals to have the options of offering online and hybrid options. We suspect that this will be particularly helpful for Summer courses. The drop in enrollment for some ENGE courses could be due to a "kink" in the pipeline leading students to these courses. Many ENGE courses have prerequisites that also have prerequisites. A drop in new student enrollment during the pandemic would cause a delay for when new students would be able to take these upper-level courses. We are seeing a rebound in Spring 2023 and are hoping that this trend will continue. Finally, a different look at these losses can be seen in the Enrollment change graph below right. This graph compares the enrollment changes since Fall 2019 for Engineering (Grey), all Math, Science, and Engineering courses (in Orange), and Mesa College (in Blue) as a whole. The Engineering courses follow the same trends as the college itself, which means that the enrollment decline may not be specific to Engineering courses.

*See Graphs attached below for this section.

There are several types of Engineering courses with different audiences and purposes. Success rates in ENGE courses overall are fairly high (above 70%) with the exception of ENGE 101 and ENGE 200. ENGE 101 is a course to introduce students to the Engineering profession. The low success rates are concerning, but we noticed that they declined during the pandemic and have begun to rise again. ENGE 200 has both a Physics and Mathematics prerequisite. This is a course in which students begin to apply the science and math that they've learned to engineering problems. It is typically a difficult course for students because of this higher-level thinking. We notice that success rates in subsequent courses are much higher.

Describe any equity gaps in the data. Are there differences and/or patterns observed by demographics (e.g.race/ethnicity, gender, age, etc.)
Data Dashboards show few overall equity gaps in success data as seen below. Engineering struggles with the success of Latinx students according to these data. Other gaps are not reported as significant, however, the gap for Black/African American students is larger than we would like. Comparison of success by gender also shows insignificant differences.

*See Data Dashboards attached below for this section.

This data may be slightly misleading. Whereas there are few equity gaps in terms of student success, there are equity gaps in relations to student enrollment. This can be seen in the success rates for Female students in ENGE 101 (top) and ENGE 200 (bottom). The interesting trend here is not the success rates themselves (which are pretty good!), but the fact that for the terms listed (Fall 17, Spring 18, Fall 18, etc.. until Fall 22) that there are only three terms in which there were female students in the course. ENGE 116 shows no female students for any of the semesters listed. Similarly, there are no African American/Black students listed for most of the ENGE courses in the last 5 years.

*See Graphs attached below for this section.

This is very problematic. We know that Female and Black/African American students are underrepresented in the Engineering program. We addressed this issue in Program Review last year. This is an equity issue but is also an enrollment issue for Engineering. Engineering can't rely on the enrollment of male students to maintain the health of the program and must attract a more diverse student body.

Summary and Reflection

Related Documents for Charts and Graphs
Engineering 2023 Program Review Graphs.docx

Describe the discussion(s) that took place about the unit's learning outcomes assessment data.
Discussions of SLO's focused primarily on the skills that students bring into the classroom. Engineering is not the first course that a student will take on their pathway. Most courses currently have Math prerequisites and/or corequisites. Those math courses often have prerequisites of their own. Students do not usually come to us without some success in STEM courses. We see very high success rates in some upper-level courses for this reason. However, math and physics continue to be a roadblock for courses such as ENGE 200. This discussion is not particularly new, but faculty have reported a decrease in math skills in terms of basic algebra and calculus. It is not clear if this is due to courses taken during the pandemic or impacts from AB1705. Something new is that faculty are reporting seeing problems with students' reading skills. Often students need to read and identify information from problems descriptions with multiple sentences. It appears that students are having trouble focusing and extracting the information that they need. It appears to go beyond the expected problem of students having difficulty translating written language into mathematical formulas. These are big concerns for Engineering and Physics students.

Data Reflection Complete
Yes

Practice Reflection

Describe current practices your program/service area has engaged in that you believe impact the above data trends and equity gaps.
Engineering faculty are beginning to address these issues by way of curricular changes, outreach, and student support. To support students in the pathway, Engineering faculty participate in Peer Mentoring for many of their courses. Student participation in Peer Mentoring has been strong as a whole this past year. ENGE faculty have also been working at different outreach events such as Jump Start and STEM Success days to encourage students to enroll in Engineering at Mesa College. The Engineering Club has returned to campus to keep students interested in the engineering pathway. In association with Mesa College's new STEM E3 grant, we have expanded upon Mesa's three existing pilot experiential learning workshops: the Engineering Simulation Virtual workshops, the Mechatronics Virtual workshops, and the Python Workshop Series; each is a series of ten workshops designed for sequential learning. The workshops provide students with the opportunity to learn about the software that is in demand in the STEM industry and are taught by STEM industry leaders and attended by current working STEM professionals, allowing students to network with STEM professionals. Students who complete all ten workshops in each series receive a Certificate of Completion, which greatly improves their chance at landing further work based internship opportunities offered by our four-year college partners.

What other factors (internal or external) might also impact the above data trends and equity gaps?
We expect that there will be strong implications on physics courses from AB1705. As discussed previously, Engineering courses rely heavily on math prerequisites. Any change in math curriculum will directly affect Engineering success. This is why engineering faculty are working closely with math faculty. To clarify, this alliance is to ensure that math faculty understand what engineering faculty expect students to know and for engineering faculty to know whether those expectations are reasonable. Neither party expects to dictate curriculum to the other. Instead, the aim is to open communication for each to see the effect on student success. We will continue to work with our excellent colleagues in the math department to serve students better in our courses. As discussed previously, faculty are also reporting issues with students' ability to read and write. This problem appears widespread among the courses, but undefined. As with the difficulties with MATH, it is unclear where these problems are coming from and what their nature is. We plan to investigate this more fully in the coming year. Again, in relation to AB 1705, integration of basic skills into all coursework is more important than it was before. We intend to offer more opportunities for students to practice reading and writing skills.

Related Documents for Charts and Graphs

Practice Reflection Complete
Yes

Mid-Cycle Updates

YEAR 2 Updates (2023 - 2024)

Provide any edits or updates to the prompts originally documented in the Executive Summary section for Year 2.
No changes

Provide any edits or updates to the prompts originally documented in the Data Reflection section for Year 2.
No changes

Review Outcomes Report. Review the unit's outcomes assessment process for 2022 - 2023. Discuss connections to unit goals/action plans/resource requests.

Provide any edits or updates to the prompts originally documented in the Practice Reflection section for Year 2.
No changes

YEAR 3 Updates (2024 - 2025)

Provide any edits or updates to the prompts originally documented in the Executive Summary section for Year 3.
We've made significant contributions by revamping the curriculum for ENGE-230 (Mechatronics) and ENGE-211 (Materials Lab). These efforts have strengthened student engagement through workshops and involvement with clubs like the Society of Women Engineers (SWE) and the Engineering Club. Additionally, we've expanded collaboration with transfer partners, particularly SDSU, which is crucial for students planning to continue their education elsewhere.

Our faculty have worked closely with the Physics and Math departments to improve prerequisite alignment for courses like ENGE-250, PHYS-195, and MATH 151. Ensuring consistency with transfer institution requirements remains a priority to support student success.

For ENGE-211 (Properties of Materials Lab), we have meticulously developed the course outline, lab procedures, and materials lists. However, despite these efforts, the course has not yet been activated due to the lack of a dedicated lab space and sufficient funding. Over the past two years, multiple formal requests have been made to the Chair and Dean to secure funding and a safe lab space. Responses to these requests have often been delayed, sometimes by up to a year. In early December 2024, we met with the Dean of the College of Engineering at SDSU, Dr. Yusuf, who emphasized the urgency of offering this course at SDCCD. He highlighted that SDSU's equivalent course is over capacity due to high student demand, reinforcing the importance of establishing this course at Mesa College to better serve engineering students. In response to administrative feedback, we have submitted a BARC request, which is a critical step in securing the necessary resources.

Looking ahead, we've designed a "Basics of Mechatronics" course set to launch in Fall 2025. This course is aligned with California's academic and industry standards and is transferable to the Mechanical Engineering program at SDSU (ME-230 SDSU), marking a significant step forward in strengthening our engineering pathways.

However, we are facing challenges regarding course scheduling. Currently, ENGE-260 (Circuits) and ENGE-250 (Dynamics) are each offered only once per year, based on administrative recommendations that cited enrollment trends and reduced Full-Time Equivalent Faculty (FTEF) allocation. Fall 2024 enrollment in these courses remained low, leading to the decision to maintain this limited scheduling. While we acknowledge the importance of data-driven decision-making, reducing the availability of these courses may push students to transfer elsewhere, negatively impacting overall program growth. To address this concern, we are conducting a comprehensive enrollment analysis to determine the long-term impact of these scheduling changes and advocate for additional course offerings where necessary.

We are advocating for the institutionalization of peer mentoring, especially as the HSI grant funding that currently supports this initiative is set to expire. Future plans include embedding peer mentoring into ENGE-101 to improve retention rates among first-year engineering students. Additionally, we aim to analyze first-year retention data in ENGE-101 to track improvements following program adjustments and implement an early-alert system to identify and support struggling students proactively.

Student organizations like SWE and the Engineering Club play a crucial role in supporting underrepresented students in engineering. While direct retention data for these clubs is limited, evidence from the STEM Peer Mentoring program suggests

that community engagement improves student confidence and persistence in STEM fields. Future initiatives to enhance these impacts include:

Expanded recruitment efforts targeting female and Black/African American students.
Strengthened collaborations between SWE and local high schools to foster early interest in engineering.
Tailored skill-based workshops, focusing on practical applications such as MATLAB, TinkerCAD, and Ansys software.
Despite student requests for Ansys workshops, faculty efforts to organize these sessions have not been prioritized. To address this gap, we propose integrating Ansys training into existing courses, ensuring that students receive the support they need without requiring additional resources.

Provide any edits or updates to the prompts originally documented in the Data Reflection section for Year 3.
we've made sure our new "Basics of Mechatronics" course is up to par by benchmarking it against similar courses at other schools. This way, we've ensured it's ready for articulation and transfer, which is great news for our students looking to move on to 4-year institutions.

On the flip side, despite years of hard work preparing ENGE 211, we still can't activate it because we don't have dedicated lab space and funding.
We have experienced a significant delay in receiving email support for location verification or safety investigations, which has adversely impacted the overall progress of the ENGE-211 project.

This really puts us behind schools that already have established labs. We're also facing issues with the limited availability for offering of ENGE 260 and ENGE 250. If we can't offer these courses more frequently, we might see students transferring out to places that do, which could hurt our program.

Review Outcomes Report. Review the unit's outcomes assessment process for 2023 - 2024. Discuss connections to unit goals/action plans/resource requests.
we really need funding to set up a cohesive lab that supports both ENGE 211 and the Mechatronics course. We need essential tools like oscilloscopes, microcontroller kits, and signal generators to make this happen. Offering every-semester sections of ENGE 260 and ENGE 250 each year is also crucial to meet our program's growth goals and address our students' needs. Even though ENGE 250 had low enrollment due to some students transferring out, we're seeing an overall upward trend in enrollments for Spring and Fall 2024, which shows our program is still going strong. We're hopeful that ENGE-250 can be offered every semester moving forward.

Provide any edits or updates to the prompts originally documented in the Practice Reflection section for Year 3.
we've got some important steps lined up to keep the momentum going. First up, we need to finalize the Mechatronics course outline and submit it by the December 2 deadline to stay on track with our course development. We're also going to advocate for lab space and equipment by working closely with our leadership—we need to secure funding for lab equipment and space for ENGE 211 and the Mechatronics course. Expanding our course offerings is a big priority, so we'll be collaborating with administration to offer multiple sections of ENGE 260 and ENGE 250 each year, which should help prevent students from transferring out and support our program's growth. We're planning to develop a proposal for a combined Materials and Mechatronics lab, highlighting how it can boost student learning and make our program more competitive. Additionally, we're aiming to realign our workshops to better meet student needs, prioritizing things like Ansys training that students have specifically requested. Lastly, we're ensuring our faculty are equipped with training in modern tools and software so they can continue delivering high-quality instruction.

YEAR 4 Updates (2025 - 2026)
Provide any edits or updates to the prompts originally documented in the Executive Summary section for Year 4.

Provide any edits or updates to the prompts originally documented in the Data Reflection section for Year 4.

Review Outcomes Report. Review the unit's outcomes assessment process for 2024 - 2025. Discuss connections to unit goals/action plans/resource requests.

Summary and Reflection

Provide any edits or updates to the prompts originally documented in the Practice Reflection section for Year 4.

YEAR 5 Updates (2026 - 2027)

Provide any edits or updates to the prompts originally documented in the Executive Summary section for Year 5.

Provide any edits or updates to the prompts originally documented in the Data Reflection section for Year 5.

Review Outcomes Report. Review the unit's outcomes assessment process for 2025 - 2026. Discuss connections to unit goals/action plans/resource requests.

Provide any edits or updates to the prompts originally documented in the Practice Reflection section for Year 5.

Unit Goals, Action Plans, and Updates

Goal 1: Increase enrollment in ENGE courses with an emphasis on ENGE 101 and ENGE 116.

Unit Goal: Goal 1: Increase enrollment in ENGE courses with an emphasis on ENGE 101 and ENGE 116.

Goal Status: Active

Beginning Year: 2022 - 2023

Projected Completion Year: 2025 - 2026

Mapping
Mesa College Strategic Plan: Roadmap to Mesa2030:

- **Completion - Objective 3:** Design and promote programs and services that intentionally target a reduction in equity gaps in completion outcomes (✓)
- **Pathways and Partnerships - Objective 3:** Increase community engagement, experiential learning, integrated career planning, and workforce training to prepare students for future careers (✓)
- **Scholarship - Objective 2:** Evaluate and improve Diversity, Equity, and Inclusion practice in classroom environments, campus activities, departments, schools, and administrative units (✓)
- **Scholarship - Objective 3:** Assess impact of prerequisites and corequisites on student success and revise curriculum, as needed (✓)
- **Scholarship - Objective 4:** Expand the use of innovative and high-quality teaching, learning, and support practices that achieve equitable outcomes and increase student success (✓)

Action Plans	Updates
Action Plan Status: Active **Action Plan:** Participate in outreach events such as JumpStart and STEM Student Success and prepare written materials for advising events **Action Plan Cycle:** 2025 - 2026, 2024 - 2025, 2023 - 2024, 2022 - 2023	**Submission Date**: 01/24/2024

Unit Goals, Action Plans, and Updates

Action Plans	Updates
	Action Plan Update: To increase enrollment and engagement in ENGE 101 and ENGE 116, we have implemented targeted strategies that emphasize outreach, diversity, and collaboration. Through participation in campus-wide events like JumpStart and the STEM Student Success Summit, we have created and distributed written materials to promote these foundational engineering courses. Together, we established the Society of Women Engineers (SWE) club at Mesa College, working with local institutions, SWE-San Diego, and high schools to encourage female participation in STEM. As part of our outreach, we invited students from Kearny Mesa High School to attend our September event, promoting SWE's mission and Mesa College's engineering programs. Additionally, we have participated in a range of events, such as the SWE Open House at Solar Turbines, Girls Conference at East Lakeside High Schools, Lincoln Senior High School, Wilson Middle School, the Latina in Tech Event, and the Junior Scientist Day at Cabrillo National Monument, to inspire and engage prospective students. The SWE club has grown to over 43 active members, 70% of whom are interested in leadership roles, and has hosted inspiring guest speakers, including Jasmine LeFlore and Candace Gray, to motivate students and highlight opportunities in STEM. On Canvas, we provide a comprehensive collection of resources for underrepresented students, such as links to the Puente Program, Umoja Community, and Women's Studies Department. By collaborating with other student clubs, including Chemistry, Biology, and Physics, we have fostered interdisciplinary support for SWE initiatives. **Update Year**: 2023 - 2024 **Action Plan Progress**: On Track
Action Plan Status: Active **Action Plan:** Explore different course offerings in terms of time and days to attract different students **Action Plan Cycle:** 2025 - 2026, 2024 - 2025, 2023 - 2024, 2022 - 2023	**Submission Date**: 01/24/2024 **Action Plan Update**: Due to increase in enrollments, we need to offer courses with different modalities so students with different life style will be accommodated. **Update Year**: 2023 - 2024 **Action Plan Progress**: On Track
Action Plan Status: Active **Action Plan:** Complete Lab Curriculum for ENGE 211 **Action Plan Cycle:** 2025 - 2026, 2024 - 2025, 2023 - 2024, 2022 - 2023	**Submission Date**: 01/24/2024 **Action Plan Update**: In order to complete the Lab Curriculum, the Engineering Materials lab equipment must be purchased and we need to find a lab space to house these lab equipment. **Update Year**: 2023 - 2024 **Action Plan Progress**: Barriers Encountered

Goal 2: Increase Student Success in ENGE 200.

Unit Goal: Goal 2: Increase Student Success in ENGE 200.

Unit Goals, Action Plans, and Updates

Goal Status: Active

Beginning Year: 2022 - 2023

Projected Completion Year: 2025 - 2026

Mapping
Mesa College Strategic Plan: Roadmap to Mesa2030:

- **Scholarship - Objective 2:** Evaluate and improve Diversity, Equity, and Inclusion practice in classroom environments, campus activities, departments, schools, and administrative units (✓)
- **Scholarship - Objective 3:** Assess impact of prerequisites and corequisites on student success and revise curriculum, as needed (✓)
- **Scholarship - Objective 4:** Expand the use of innovative and high-quality teaching, learning, and support practices that achieve equitable outcomes and increase student success (✓)
- **Stewardship - Objective 3:** Increase student access and schedule efficiency by coordinating schedules among departments/disciplines (✓)

Action Plans	Updates
Action Plan Status: Active **Action Plan:** Expand Peer Mentoring Program **Action Plan Cycle:** 2025 - 2026, 2024 - 2025, 2023 - 2024, 2022 - 2023	**Submission Date**: 12/04/2024 **Action Plan Update**: We aim to enhance the Peer Mentoring Program by recruiting experienced students from ENGE courses to serve as mentors, fostering a supportive learning environment. This includes pairing mentors with new students, hosting group study sessions, and providing focused support on challenging topics like MATLAB programming and circuit analysis. **Update Year**: 2024 - 2025 **Action Plan Progress**: On Track
Action Plan Status: Active **Action Plan:** Continue work with the STEM Curriculum workgroup to explore Math prerequisites and connections to other disciplines and clear pathways for students. **Action Plan Cycle:** 2025 - 2026, 2024 - 2025, 2023 - 2024, 2022 - 2023	**Submission Date**: 12/04/2024 **Action Plan Update**: We will collaborate with the STEM Curriculum Workgroup to evaluate and streamline math prerequisites for ENGE courses. This includes aligning math concepts with engineering applications and developing resources, such as preparatory workshops, to strengthen the connection between prerequisite math courses and ENGE course content. **Update Year**: 2024 - 2025 **Action Plan Progress**: On Track
Action Plan Status: Active **Action Plan:** Identify more clearly reading and writing problems for students in ENGE courses. **Action Plan Cycle:** 2025 - 2026, 2024 - 2025, 2023 - 2024, 2022 - 2023	**Submission Date**: 12/04/2024 **Action Plan Update**: We will integrate diagnostic assessments early in ENGE courses to pinpoint reading and writing challenges. By providing tailored support, such as engineering-focused writing workshops and annotated examples of technical documentation, we aim to help students improve their comprehension and technical communication skills, crucial for success in engineering.

Unit Goals, Action Plans, and Updates

Action Plans	Updates
	Update Year: 2024 - 2025 **Action Plan Progress**: On Track

Goal 3: Decrease Enrollment gaps for Female and Black/African American students in ENGE

Unit Goal: Goal 3: Decrease Enrollment gaps for Female and Black/African American students in ENGE

Goal Status: Active

Beginning Year: 2022 - 2023

Projected Completion Year: 2025 - 2026

Mapping
Mesa College Strategic Plan: Roadmap to Mesa2030:

- **Completion - Objective 3:** Design and promote programs and services that intentionally target a reduction in equity gaps in completion outcomes (✓)
- **Scholarship - Objective 2:** Evaluate and improve Diversity, Equity, and Inclusion practice in classroom environments, campus activities, departments, schools, and administrative units (✓)
- **Scholarship - Objective 3:** Assess impact of prerequisites and corequisites on student success and revise curriculum, as needed (✓)
- **Scholarship - Objective 4:** Expand the use of innovative and high-quality teaching, learning, and support practices that achieve equitable outcomes and increase student success (✓)

Action Plans	Updates
Action Plan Status: Active **Action Plan:** Participate in outreach events such as JumpStart and STEM Student Success and prepare written materials for advising events. **Action Plan Cycle:** 2025 - 2026, 2024 - 2025, 2023 - 2024, 2022 - 2023	**Submission Date**: 12/04/2024

Unit Goals, Action Plans, and Updates

Action Plans	Updates
	Action Plan Update: We actively engage in outreach initiatives such as JumpStart and the STEM Student Success Summit, presenting student projects like "Investigating the Effectiveness of Women in Advancing the Science of Engineering" and "Advancing Engineering Science: Exploring the Effectiveness of African-American Contributions," both advised by Hamid Bahraseman. Drawing on insights from his ESCALA Professional Development, these projects align with strategies rooted in the Latinx Student Success Framework and Validation Theory, emphasizing the importance of inclusive classrooms that validate cultural and experiential knowledge. These events inspire high school students, particularly from schools like Kearny Mesa High School, Eastlake High School, and others, to pursue engineering, bridging gaps in representation and equity. **Update Year**: 2024 - 2025 **Action Plan Progress**: On Track
Action Plan Status: Active **Action Plan:** Explore different course offerings and modalities. **Action Plan Cycle:** 2025 - 2026, 2024 - 2025, 2023 - 2024, 2022 - 2023	**Submission Date**: 12/04/2024 **Action Plan Update**: Building on culturally responsive strategies learned through ESCALA, we integrate flexible modalities, including hybrid and online courses, to meet diverse student needs. Courses like ENGE 101 and ENGE 116 incorporate tools such as Tinkercad, MATLAB, and ANSYS while addressing systemic barriers to success. Hamid Bahraseman’s teaching innovations, like diversity surveys and inclusive assessments, ensure that underrepresented students find these courses accessible and empowering. These efforts are complemented by culturally relevant projects that enhance engagement and representation. **Update Year**: 2024 - 2025 **Action Plan Progress**: Completed
Action Plan Status: Active **Action Plan:** Explore connections with Transfer Partners to connect students to engineering clubs such as Society of Women Engineers. **Action Plan Cycle:** 2025 - 2026, 2024 - 2025, 2023 - 2024, 2022 - 2023	**Submission Date**: 12/04/2024 **Action Plan Update**: Through collaboration with SDSU, UCSD, and other transfer partners, we align course offerings to support seamless transitions for underrepresented students. Leveraging Hamid Bahraseman’s experience with ESCALA, we connect students to engineering clubs like the Society of Women Engineers (SWE) and encourage participation in initiatives that promote belonging, such as the ESCALA STEM Identity Survey. Projects like "Investigating the Effectiveness of Women in Advancing the Science of Engineering" serve as touchpoints for these partnerships, highlighting the role of diversity in engineering and fostering networks of support. **Update Year**: 2024 - 2025 **Action Plan Progress**: On Track
Action Plan Status: Active	**Submission Date**: 12/04/2024

Unit Goals, Action Plans, and Updates

Action Plans	Updates
Action Plan: Purposefully recruit and retain students from underrepresented groups in introductory courses such as ENGE 101. **Action Plan Cycle:** 2025 - 2026, 2024 - 2025, 2023 - 2024, 2022 - 2023	**Action Plan Update**: We purposefully recruit and retain students from underrepresented groups by implementing culturally responsive practices and showcasing relatable role models. Projects such as Juan Lukisa's exploration of African-American contributions to engineering and Anastasia Egoudine's research on women's impact in STEM, both advised by Hamid Bahraseman, provide opportunities for meaningful representation. Guided by ESCALA principles, Hamid has developed strategies like flexible office hours, non-punitive assessments, and equity-focused content that empower students and reduce barriers to success. These efforts, combined with the SWE club's robust leadership and outreach, foster an inclusive environment where all students can thrive in engineering. **Update Year**: 2024 - 2025 **Action Plan Progress**: On Track