

Program: Engineering (Transfer) and Engineering Technology (CTE)

Division: STEM

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SLO/SAO Point-Person: Jennifer Decker

Audience: Deans, Vice Presidents of Student Services and Academic Services, All Planning and Allocation Committees. This document will be available to the public.

Uses: This Program Review will inform the audience about your program. It is also used in creating division summaries, determining college planning priorities, and determining the allocation of resources. The final use is to document the fulfillment of accreditation requirements.

Please note: Program Review is NOT a vehicle for making requests. All requests should be made through appropriate processes (e.g., Instructional Equipment Request Process) or directed to your dean or supervisor.

Time Frame: This Program Review should reflect your program status during the 23-24 academic year. It should describe plans starting now and continuing through 2024-25.

Helpful Links:

- ★ [Tools for Writers](#) - with contacts for help with specific sections.
- ★ [Program Review Glossary](#) - defines key terms you can review when writing.
- ★ [Fall 2023 Program Reviews](#)
- ★ [Program Review FAQs](#)

For help with your program review, please contact Karin Spirn at kspirn@laspositascollege.edu

Sections

There are four sections to the document:

1. Review your program, including curriculum updates, accomplishments, challenges, and planning.
2. Data Analysis
3. SLO/SAO Review
4. Feedback on the PR template and process

Instructions

1. Please answer each question with enough detail to present your information, but it doesn't have to be long.
2. If the requested information does not apply to your program, write "Not Applicable."
3. Optional/suggested: Communicate with your dean while completing this document.
4. Send an electronic copy of this form to Program Review chair, Karin Spirn, and your Dean by Monday, Nov. 4, 2024
5. Even if you don't have much to report, we want to hear from you, so your voice is part of the college planning process.

Equity is a guiding principle. Here is the LPC definition:

Las Positas College will achieve equity by changing the impacts of structural racism, ableism, homophobia, and systematic poverty on student success and access to higher education, achieved through continuous evaluation and improvement of all services. We believe in a high-quality education focused on learning and an inclusive, culturally relevant environment that meets the diverse needs of all our students.

LPC Equity Definition: Equity is parity in student educational outcomes. It places student success and belonging for students of color and disproportionately impacted students at the center of focus.

Section 1: Your Program In 2024-2025

Please place an X next to N/A where relevant

A. Accomplishments: Identify your main accomplishments from the 23-24 academic year.

Some areas you *may* want to note in your explanation are:

- Did your accomplishments support your program's plans identified in recent PRs?
- Did they relate to guided pathways?
- Were they in support of the colleges [equity definition](#)?
- Did they connect to any of the college [planning priorities](#)?
- Did you receive any positive/negative feedback from students?
- Are there any innovations or new processes you'd like to integrate?
- Has your program changed in response to the SCFF model of college funding? (completions, increasing enrollment, offering certificates, degrees, etc.)?

Transfer, Degree and Certificate Completions

- Forty-seven (47) students transferred from LPC to an engineering department within the California University system after the 2023-2024 academic year.
 - Thirty-three (33) students transferred from LPC to an engineering department at a CSU – twenty-six (26) of which are attending San Jose State University.
 - Thirteen (13) students transferred from LPC to an engineering department within the University of California system.
- Thirteen (13) students earned an AS and one (1) earned a Certificate of Achievement in one of our Engineering programs at Las Positas during the 2023-2024 academic year.
- Eight (7) students earned an AS in Engineering Technology.
- During the spring semester, instructors make a point to remind students at the beginning of the semester to check in with a STEM counselor to see if they qualify for an Associate's Degree or Certificate and then take time during class to apply for degrees and certificates.
- The Engineering Department continued to collaborate with other STEM departments to avoid course conflicts to ensure students could complete their degree and/or transfer requirements. There was also collaboration with the Welding department to ensure that our Engineering Technology students wouldn't experience any course conflicts and could take the courses necessary to complete their degree.

Outreach

- The Engineering Department participated in Las Positas College's HS Preview Day and Open House where we shared the programs that we offer including the AS in Engineering Technology and our transfer pathways.

- The Engineering Department also participated in outreach in our local community to share more about our Engineering Technology CTE program including attending CTE fairs at both Granda and Livermore High, the TVROP Annual Advisory Dinner, and at the Tri-Valley Innovation Fair.
- The Engineering Department invited Green Engineering Academy members from Livermore High School to LPC to learn about our Engineering Transfer and Engineering Technology programs, as well as to participate in a bridge building and testing activity.

Student Success and Equity

- The Engineering Department met its Course Success Rate standard of 65.0% with a success rate of 69.8%.
- The number of females enrolled in engineering has increased to pre-Covid numbers (at about 18% of all enrollments).
- The engineering department coordinator is part of the STEME Student Success team – holding a dedicated office hour once a week for students who are interested in learning more about the engineering pathways we offer.
- LPC was awarded a National Nuclear Security Administration (NNSA) Minority Serving Institution Partnership Program (MSIPP) in collaboration with the Lawrence Livermore National Lab (LLNL) to provide a series of career technical workshops through LPC Community Education. The first workshop, a Vacuum Technology Workshop, was offered during the 2023-2024 academic year. It served a diverse group of 25 students (Ages: 18-54; Ethnicities: Asian, African American, Hispanic, Pacific Islander and White; Education: No degree, Associates, Bachelors, Masters and Doctorate)

Student Opportunities

- Seven (7) Engineering Transfer and Engineering Technology students secured summer internships at the Lawrence Livermore National Lab during the summer of 2024.
- The Women in STEM Association was started by an engineering student and the faculty advisor is the Engineering Department Coordinator. The club participated in all of the LPC student club activities including Welcome Week and the Club Fairs. The club also went on a field trip to the Exploratorium and coordinated a panel of women engineers and scientists from the Lawrence Livermore National Lab (LLNL) to come talk at one of the club meetings.
- An additional section of Engineering 23, Engineering Graphics, was offered during the Spring of 2024.

N/A_____

B. Challenges, Pain Points, and Needs

What significant or ongoing challenges or obstacles did your Program face during the 23-24 academic year, especially related to accomplishing program goals/plans? Consider funding, staffing, materials, facilities, outside requirements such as legislative mandates, working on equity gaps, etc. Highlight/identify any challenges mentioned in previous reviews.

Continued Challenges

- Full Time Engineering Faculty Workload – Currently allocated a yearly 1.0 CAH reassign time.
 - Coordinating two programs within the department – Engineering Transfer and Engineering Technology (CTE)
 - Required to teach 3-4 very different engineering discipline courses (mechanical, electrical and materials courses) each semester in order to make load.
 - Participated in both required and optional division and college-wide activities including committee work, acting as a faculty club advisor, and participating in recruitment in order to maintain the growth of the engineering programs.
 - Acts as the Student Learning Objective Coordinator for the Engineering department. It is challenging to find the time for the coordinator to not only train the part-timers on the SLO evaluation process, but also find the time to learn how to generate and then analyze the SLO data to get the most out of it.
 - Participates in planning meetings related to the renovation of Bldg. 1800
 - This past academic year (and for the next two academic years) the engineering department coordinator was also the Principal Investigator on the NNSA MSIPP Grant, which required regular meetings with our LLNL collaborators, the LPC business office and NNSA representatives, as well as extensive data collection and reporting.
 - The Engineering Technology program has an active advisory board which often proposes new curriculum based on industry needs for the full-time faculty member to explore with the support of the industry partners. Most recently, they have discussed the need for more electronics-based curriculum, as well as the creation of high school to community college bridge programs for those students interested in Engineering and Engineering Technology.
 - Time should also be allocated to working with local transfer universities including CSU East Bay, San Francisco State University, UC Merced and University of the Pacific to create easier pathways and explore other foundational courses to add to our programs for students who are pursuing Engineering Transfer. (See data in Section 2.) This has been done with success at other community colleges throughout the state (as learned about at my biannual attendance of the Engineering Liaison Council).
 - Industry partners have expressed interest in working with LPC Engineering to create project-based learning experiences for current students. Depending on the partner, these experiences may have to happen on our campus with mentorship provided by both industry reps and faculty. This requires work to find, create and implement these opportunities.

- There is some continued concern that the Engineering and Welding departments can offer the courses needed for Engineering Technology students to complete their degrees, as challenges in obtaining FTEF arise.

- Our ENGR 23 – Computer Graphics course is offered during the evening hours both semesters and there have been challenges in getting technology help in the evenings. Since this is a computer-based course, ensuring the technology is working and addressing any issues is a timely matter is very important.
- Only a small percentage of engineering students qualify for a degree and/or actually apply for a degree or certificate. This requires outreach by the instructors to encourage students to verify eligibility with a counselor and then apply for that degree or certificate. If degrees were auto awarded through Degreeworks, this would streamline this process.

New Challenges

- As the enrollments in physics increase, the engineering department needs to be able to accommodate more students in our transfer level engineering courses
- Engineering Transfer Pathways
 - There is work being done at the state-level to bring continuity to the transfer process from California Community Colleges to both UCs and CSUs. Locally, this will require staying plugged in to the work being done by attending the biannual Engineering Liaison Council meetings and updating curriculum and pathways, as necessary, to ensure articulation is maintained.
- Engineering Tutoring
 - It is very challenging to find qualified engineering tutors. This is because some of the upper division courses for which tutoring is required, students are transferring after taking the courses and thus are not around to provide tutoring. In addition, students are typically taking multiple engineering, physics and math courses, thus not having time to provide tutoring.
 - Retired scientists from the laboratory have offered to be tutors, however, there are complications in making this happen due to district procedures.
 - There have been multiple requests for Engineering tutoring in the MESA center however, due to time constraints, the full-time engineering faculty has not been able to make it work.

N/A_____

C. Planning: What are your program's most important plans, either new or continuing?

- Continue to collaborate with other STEM disciplines and the Welding Department to ensure that our students can take all of the classes they need to achieve their educational goals.
- Collaborate with local universities (UCs, CSUs, Private) to create transfer pathways and provide opportunities for students to learn more about these colleges.

- Collaborate with other CA community college engineering departments to learn best practices when it comes to supporting students and providing equitable outcomes.

N/A_____

D. Identify any college, district, or legislative barriers to your program’s equity work. What suggestions do you have for minimizing or eliminating these barriers?

Barriers: The main barrier to the engineering program’s equity work is time. Time to research and implement pedagogical techniques and assignments that that would improve equitable outcomes. Time to outreach to students individually – i.e. providing support that may extend outside of class time and office hours. This has become more challenging as class sizes have increased.

Suggestions: Ensure that single person departments have adequate amount of time and support to continually updated curriculum, assignments and pedagogical techniques to improve equitable outcomes, while still being able to complete all of the necessary administrative tasks required to keep a department successful.

N/A_____

E. Curriculum Updates

Reasons for updating include that it is required every two (CTE) or five (non-CTE) years, there is a program or college need, starting a new program, or new legislation.

1. Are you planning to update any curriculum in 24-25?
Yes No

2. Comments (Optional):

Courses will be strategically updated over the next couple of years to ensure that updates for all courses don’t happen in the same year and that fewer updates are required in the Fall when the workload for the department coordinator is larger.

Fall 2024 Changes

- The Engineering Technology program had to be updated due some changes to Welding Curriculum (WLDT 62A became WLDT 61 or WLDT 62)
- Engineering 26, Computation Methods for Scientists and Engineers, had to be updated due to UC Davis pulling articulation earlier this semester.

Spring 2025 Changes

- Engineering 37, Applied Statics and Materials will be updated from a 3-unit course to a 4-unit course on recommendation from the Engineering Technology Industrial Advisory Board.
- Engineering 50, Introduction to Electronic Systems and Measurements will be updated from a 4 unit-course to a 3-unit course on recommendation from the Engineering Technology Industrial Advisory Board.
- Engineering 46, Materials of Engineering will be updated on its required 5-year cycle.

3. Please review your program [maps](#). Do you need to make any modifications?

Yes_____ No_X_____

4. If yes, compare each [Program Map](#) to your current course offerings and sequencing. Pay close attention to prerequisite information, and classes offered only during certain semesters.
- If your map requires a **non-curricular change** (i.e., course sequencing), consult your [Pathway counseling faculty liaison](#) to initiate changes.
 - If your map requires a curricular change** (Program modifications) - these are initiated through the Curriculum Committee.
- Any questions? Contact the [Curriculum Chair](#) or the [Curriculum and SLO Specialist](#).

Section 2: Data Analysis – Quantitative and Qualitative

IR Data Review: Discuss any significant trends in the data provided by the Office of Institutional Research and Planning (or any other data you use for decision-making and planning).

(Note: Not all Programs have IR data available; if your program does not have a data packet or dashboard data, you may note that in the response box and reach out to [the IR team](#).)

Here are a few samples of data to review and reference if that's helpful.

- IR Data packets [are available here](#) (Posted Fall 24)
- Academic & Career [Pathway Specific data](#) (Posted Fall 24)
- Your program's survey data
- [Transfer data](#)
- Course Set Standard Overview & Success Rates Dashboard are in the middle of [this page](#)

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- Overall student success declined from 72% to 70%, however there was also an increase in enrollment from 240 to 295.
 - Engineering 1 had a 64% success rate.
 - The enrollment in these classes has increased significantly, which makes it more challenging for the instructor to make individual connections with students, which experience shows helps with student success.
 - Engineering 23 had a 64% success rate.
 - This is the first engineering course that is content heavy, so it is often challenging when students move from Engineering 1 to Engineering 23.
 - The department hopes to have a tutor for this class in the future.
 - Engineering 37 had a 57% success rate.
 - This has historically been the most challenging course in the Engineering Technology program.
 - There is a plan to increase the units on this course from 3 to 4 units to allow the instructor to spend more time on instruction and students to have more time to practice problem solving while in class.
 - The department hopes to have a tutor for this class in the future.

- Engineering did not have any students transfer to UC Merced, CSU East Bay or San Francisco State University. There may be some opportunity to create transfer agreements with these local universities to encourage students to transfer to these local institutions.
- No students received degrees or certificates in the Electrical Engineering UC Pathway or Mechanical Engineering UC Pathway. This is something to review to determine why this is the case.
- Engineering Student Survey Results
 - Students would like there to be more times/sections available for courses. In many cases, students are taking engineering, physics, and math classes back to back with engineering courses often starting at 8 or 8:30am in the morning.

B. Program-Set Standard (Instructional Programs Only):

The program-set standard is a baseline that alerts programs if their student success rates have dipped suddenly. 95% of the rolling 5-year average. There are valid reasons a program does not meet the Program Set Standard; when a program does not meet this standard, they are asked to examine possible reasons and note any actions that should be taken, if appropriate. | [Program-set standard data can be found on this page.](#)

1. Did your program meet its program-set standard for successful course completion?

Yes No

2. If your program did not meet your program-set standard, discuss possible reasons and how this may affect program planning or resource requests.

Section 3: SLOs/SAOs: Assessment of Student Learning and Support

Program Review is the college’s major data source on student learning and support and is, therefore, regularly reviewed. *Each year, programs must discuss their PSLOs, CSLOs, or Service Area Outcomes (SAOs.) This helps us to see how our students are progressing in their learning.* For assistance with these questions and instructions on running reports using eLumen, [click here.](#)

Please complete at least one of the following three sections based on what is appropriate for your program. Check at least one below:

- C1: Instructional Programs with PSLOs (disaggregated PSLOs)
- C2: Instructional Programs with CSLOs (*Departments without degrees, non-major courses, and/or other courses up for assessment*)
- C3: Non-Instructional Programs (SAOs)

C1: Instructional Programs with PSLOs (disaggregated PSLOs)

To assess PSLOs within eLumen, CSLOs must be correctly mapped to only one PSLO, and every mapped CSLO must have assessment data. Please review the items below and proceed accordingly.

- If the CSLOs are mapped correctly and there is data for each CSLO, then continue to question 2.
- If the CSLOs have assessment data and the mapping needs to be completed, then complete the mapping within eLumen ([See SLO Handbook, p. 7](#)) and continue to question 2.
- If not all mapped CSLOs have assessment data, then you cannot assess the PSLO. In this case, continue to section C2.

1. [Please review your 3-year plan](#) and verify that all courses will be assessed by June 2026. (between Fall 2023 – Spring 2026)

Will at least one SLO be assessed in each course by June 2026?

Yes_X___ No___

If not, please update your 3-year plan to include any courses you missed. If you plan to revise your 3-year plan, then send your updated plan to the [Curriculum and SLO Specialist and the SLO Chair](#).

2. Based on your [3-year plan](#), list the PSLO(s) for the academic year 2023-2024 that your program selected to review and explain why these were chosen.
 - All PSLOs will be reviewed during the 2023-2024 academic year. This is because in engineering not every course is offered every semester and not every course maps up to all of the PSLOs.
3. What percentage of faculty completed the planned CSLO assessments? (In eLumen, [run a Faculty Participation report](#) for 23-24).
 - 25%
 - Only full-time faculty completed planned assessments.
4. Analysis of PSLO(s): What conclusions can be drawn about student learning and equity in your program based on eLumen and/or other data? You may want to consider disaggregated data. When using eLumen [See the Guide](#) for instructions on how to disaggregate PSLO data.
 - Multiple reports were generated and data was disaggregated for a variety of the engineering programs. It was challenging to sift through all of the different sets of data and draw definitive conclusions.
5. [Based on discussions with others in your program](#), explain potential changes designed to improve student learning and close any equity gaps identified through the analysis of PSLO data. Please also note if you decide to update any CSLOs or PSLOs based on this analysis (If updating, then you may do this through eLumen, see the [SLO Handbook](#) if you need instructions on how to do this).
 - Engineering is working with the Veteran's Center to hire a tutor that will provide help for Veterans who are taking engineering courses.
6. If you experienced any challenges in completing your PSLO assessment process, please list those below along with any items that would help you improve this process in the future.
 - This is the first year that the Engineering department has been able to generate data and I need some training to understand best practices in what to look for in this data.
 - Engineering also has 7 degrees and 7 certificates where PSLO data is being captured. It would be more beneficial for me to be looking at the course level since most of my courses are included in all of these programs.

- For Engineering Technology, PSLOs that are no longer active are showing up on reports, making the data challenging to sift through.
- There is limited data for some courses because part-time faculty has not put data in eLumen. The SLO Coordinator has sent reminder emails, but has not had the time to schedule meetings with part-time faculty (many who work full-time in the engineering industry or at other community colleges), in order to train them on the process.

C2: Instructional Programs with only CSLOs - Departments without degrees, non-major courses, and/or other courses up for assessment

1. [Please review your 3-year plan](#) and verify that all courses will be assessed by June 2026. (between Fall 2023 – Spring 2026)

Will all courses be assessed by June 2026?

Yes_____ No_____

If not, please update your 3-year plan to include any courses you missed or if you plan to revise your 3-year plan, then send your updated plan to the [Curriculum and SLO Specialist, and the SLO Chair](#).

2. Based on your [3-year plan](#), list the CSLO(s) for the academic year 2023-2024 that your program selected to review.
3. What percentage of faculty completed the planned assessments for the selected CSLO? (In eLumen, [run a Faculty Participation report](#) for 23-24).
4. What conclusions can you draw from the CSLO data and reflections in eLumen. If you used any additional evidence or methods to answer this question, please explain.
5. Explain potential program changes designed to improve student learning. Please also note if you have decided to update any CSLOs or PSLOs based on analysis (If updating, then you may do this through eLumen, see the [SLO Handbook](#) if you need instructions on how to do this).
6. If you experienced any challenges in completing your CSLO assessment process, please list those in the box below, along with any items that would help you improve this process in the future.

C3: Non-Instructional Programs (SAOs)

1. [Please review your 3-year plan](#) and verify that all courses will be assessed by June 2026. (between Fall 2023 – Spring 2026)

Will all courses be assessed by June 2026?

Yes_____ No_____

If not, please update your 3-year plan to include any courses you missed or if you plan to revise your 3-year plan, then send your updated plan to the [Curriculum and SLO Specialist, and the SLO Chair](#).

2. Based on your [3-year plan](#), list the SAO(s) for the academic year 2023-2024 that your program selected to review.
3. Based on discussion with others in your area, what conclusions can be drawn from the SAO data and reflection questions from eLumen or other sources of data?
4. Explain any planned changes to improve outcomes in your service area. Please note if you have decided to update any SAOs based on this analysis.
5. If you experienced any challenges in completing your SAO assessment process, please list those below, along with any items that would help you improve this process in the future.

Section 4: Suggestions for the Program Review Committee (optional)

What questions or suggestions about this year's Program Review forms or process do you have?