

Program: Engineering (Transfer) and Engineering Technology (CTE)**Division: STEM****Date: 10/10/23****Writer(s): Jennifer Decker**

With the approval of the Academic Senate and the Institutional Planning and Effectiveness Committee, we are moving to a bi-annual cycle of program review updates and full program reviews. **Fall 2023 is a Program Update cycle.**

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

Time Frame: This Program Update *should reflect* on program status during the 2022-23 academic year. It should *describe plans* starting now and continuing through 2023-24.

Key Terms: The Program Review Glossary defines key terms that you can review before writing: <https://bit.ly/2LqPxOW>

HELPFUL LINKS:

- 1) [Program Review Committee Page for Writers](#)
- 2) [Fall 2022 Program Reviews](#)
- 3) [Frequently Asked Questions](#)

For Help: Contact Nadiyah Taylor: ntaylor@laspositascollege.edu.

INSTRUCTIONS:

- 1) Please respond to each question with enough detail to present your information, but it doesn't have to be very long.
- 2) If the requested information does not apply to your program, write "Not Applicable."
- 3) Suggested: Communicate with your dean while completing this document.
- 4) Send an electronic copy of this form to Nadiyah Taylor and your dean **by November 1, 2023**

IMPORTANT CHANGES AND REMINDERS

Some sections have been removed for ease of completion. However, these important tasks will need to be reviewed by programs:

- ✓ **Check for Title V updates required for any of your courses or Programs:**
 1. To check on the status of courses and programs to see if any updates are required
 - a. Log in to CurricUNET
 - b. Select "Course Outline Report" under "Reports/Interfaces"
 - c. Select the report as an Excel file or as HTML)
 2. If updates are needed, submit these updates to the Curriculum Committee
 3. Then, compare each Program Map to your current course offerings and course sequencing. Pay close attention to prerequisite information and to classes that may only be offered during certain semesters.
 - a. If your map requires a **non-Curricular** change (i.e., course sequencing) consult your [Pathway counseling faculty liaison](#) to initiate any changes.
 - b. If your map requires a **Curricular Change** (Program modifications) - these are initiated through the Curriculum Committee.
- ✓ **Review your programs to see if there are any modifications needed**
- ✓ **Review your programs and courses to see if any will be sunset or deactivate**

HAS YOUR PROGRAM HAD ANY SIGNIFICANT UPDATES SINCE THE LAST PROGRAM REVIEW?

- No, I'd like to skip the update this year, and I understand that I can only do this twice in three years.**

THERE ARE TWO SECTIONS:

1. Updates - *All programs* (page 3)
2. CTE Review – *CTE programs only* (pages 4-7)

ALL PROGRAMS: SECTION ONE

1. Please describe the most important updates, achievements, challenges, or barriers to your program in academic year 22-23.

ACHIEVEMENTS and UPDATES

- Fifty (50) students transferred from LPC to an engineering department within the California University system after the 2022-2023 academic year.
 - Thirty-seven (37) students transferred from LPC to an engineering department at a CSU - twenty (20) of which are attending San Jose State University.
 - Thirteen (13) students transferred from LPC to an engineering department within the University of California system.
- Fifteen (15) students earned an AS and three (3) earned a Certificate of Achievement in one of our Engineering programs at Las Positas during the 2022-2023 academic year.
- Eight (8) students earned an AS and two (2) earned a Certificate of Achievement in Engineering Technology.
- Eleven (11) Engineering Transfer and Engineering Technology students secured summer internships at the Lawrence Livermore National Lab during the summer of 2023.
- The Engineering Department participated in most of Las Positas College's college-wide events including Welcome Week, HS Preview Day and Open House where we shared the programs 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 Learning Objectives were reviewed and updated. CSLO's were mapped to PSLO's in eLumen. A 3-year plan was created and turned in to the SLO committee.

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- The Engineering Department continued to collaborate with other STEM departments to avoid any common course conflicts. There was also collaboration with the Welding department to ensure that our Engineering Technology students wouldn't experience any course conflicts.
- The Engineering Department met its Course Success Rate standard of 64.8% with a success rate of 71.7%.
- 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.

CHALLENGES and BARRIERS

- The full-time engineering faculty member (and department coordinator) must teach 3-4 very different engineering discipline courses (mechanical, electrical and materials courses) each semester in order to make load. In addition, they must participate in division and college-wide activities leaving little time to focus on the health and growth of the Engineering Transfer and Engineering Technology programs.
- Balancing the 1.0 CAH reassign coordination time between both the Engineering and Engineering Technology programs is challenging.
 - 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.
 - Our LPC Employer Engagement Specialist often sets up meetings for the engineering faculty to meet with local industry to promote our Engineering Technology program.
 - Time should also be allocated to working with local transfer universities including CSU East Bay, University of the Pacific and UC Merced to create easier pathways and explore other foundational courses to add to our programs for students who are pursuing Engineering Transfer.
 - 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.

- Over the years, there has been interest in creating summer engineering related opportunities for both middle and high school students to learn about engineering and all that Las Positas has to offer.
- The enrollment in the Engineering Department, although increased from the previous academic year, is still down from its pre-Covid numbers. There are many ways that we can continue to improve those numbers, however the limiting factor in many cases is the time of the full-time faculty member (see above for ideas that could lead to enrollment improvement).
- It is challenging to find qualified adjunct engineering instructors who are passionate about teaching their subject matter to community college students and supporting students throughout the process.
- Ensuring that courses from our Engineering Technology program that are offered in other divisions are prioritized such that they are offered 1x per year so students can complete their degree in a timely manner without having to travel to other colleges to take similar courses.
- Currently, our Solidworks licensing is paid for through CTE funds, but there may be a change in the future. The engineering faculty will need to meet with all parties this academic year to determine the funding source for the next academic year.
- As we added an evening section of our ENGR 23 – Graphic course to our schedule, our adjunct instructor has had 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.
- As noted from the data in the accomplishments section, only 36% of students who transferred earned an associate degree or certificate from LPC.
 - Because Engineering is a high-unit degree, most students will not earn an AS here at LPC, as they are required to take 4-5 math courses, 3-4 physics courses and 3-4 engineering courses at a minimum to transfer. Each of these courses is

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4-5 units. This is the reason for the creation of our Certificate of Achievements which includes most of the required courses for transfer.

- Many students don't see the benefit of taking the time to fill out the additional paperwork to apply for the certificate. I have personally encouraged students to see our STEM counselors to assess if they qualify for any of the certificates and have allotted lab time to fill out the paperwork, however as noted from the data, only a fraction of the students complete the process.
 - This metric could be improved if degrees and certificates were auto awarded to students who qualify through DegreeWorks.
2. What are the most important things your program observed with respect to student learning, equity, and success in 22-23? This could be related to your SLOs or from other sources.

The source for the following observations was the Program Set Standard for Course Success Rates provided by the LPC Research, Planning and Institutional Effectiveness department.

- Success rates of first-time college/transfer and returning students are lower than that of continuing students. In addition, the success rate of ENGR 23 for the last academic year is the lowest of any of the Engineering courses at 50%. This is the first course that many students take that is true engineering content and often in their first year at LPC which is likely contributing to the lower success rate. This course is typically taught by an adjunct instructor.
 - It is often challenging to find a dedicated tutor for engineering courses since engineering students who have previously taken the course are busy with their own class schedules and don't have the bandwidth to officially become a tutor.
 - Future collaboration will be done between the full-time faculty and adjuncts to see what type of support could be added to improve the future success rate.

3. Got anything new planned for 23-24?

- The Engineering Department Coordinator is planning to work with part-time faculty in order to start entering SLO data into eLumen in accordance with the 3-year plan.
- STEM students created a Women in STEM Association in which the Engineering Department Coordinator is the advisor. The club hopes to try to start a Society of Women Engineers affiliate.
- LPC was awarded a National Nuclear Security Administration grant. This grant would help create a rapid education and placement program at LPC where courses would be offered in areas of technical need including vacuum, welding, machining, graphics, advanced manufacturing, non-destructive evaluation and laser optics. Students who have participated in this program could return to LPC to earn an Engineering Technology degree and then be placed as technologists at LLNL to fill a critical shortage of skilled workers. It could also provide a place where workers at the lab can come to LPC to gain necessary additional skills for their role.
- Continued collaboration with other STEM departments including Math and Physics to create office hour schedules that don't conflict with courses that Engineering students are also taking.
- Engineering faculty is participating in the meetings involving the 1800 building renovation. Engineering and physics are collaborating to ensure that a representative from one of our disciplines is always in attendance.
- The Engineering Department hopes to introduce our programs to students who attend the local alternative high schools. This will be done in conjunction with the STEM Program Specialist, Jean O'Neil-Opipari.

CTE UPDATE (CTE PROGRAMS ONLY): SECTION TWO

Vicki Shipman will provide you with or support any data needs

LABOR MARKET CONDITIONS: EXAMINE YOUR MOST RECENT LABOR MARKET DATA (WITHIN THE LAST 2 YEARS).

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1. Demonstrate labor market need (demand – completers = need); projected growth for the next five years.

As of 2021, the number of job openings in our region is 289. It is not clear which specific engineering technology specialties these openings are available in, as the definition of engineering technology in this data set appears to be very broad (as will be explored below).

The number of completions reported is 507. Some of these completions (206) include Bachelor's Degrees from CSUs and an Arts College, which have programs that don't seem directly comparable to the Engineering Technology program here at LPC and/or involve industrial and product design. One hundred and sixteen (116) of the completers were from programs such as those at City College of San Francisco that focus on the Heating, Ventilation, and Air Conditioning technology.

Based on the top programs from which completion data was provided, our graduates would be most likely to fill roles in Industrial Mechanical and Machine Technology, Engineering Technologies and Industrial Technologies of which there were a total of 98 completions. This results in a perceived need of 191.

Again, this data doesn't appear to give an accurate measure of the true need for engineering technologists in our area. Our program has been developed based on the specific needs of the industries in our local area.

2. What is the median income for occupations within your program?

Regional compensation is 12% higher than the national average (\$73,223 regionally vs. \$65,416 nationally).

ADVISORY BOARDS:

1. Has your program complied with advisory board recommendations?
 - i. YES No
2. If not, please explain.

STRONG WORKFORCE PROGRAM METRICS: UTILIZING LAUNCHBOARD, REVIEW THE STRONG WORKFORCE PROGRAM METRICS. REVIEW THE DATA AND THEN REPORT ON YOUR SPECIFIC PROGRAM.

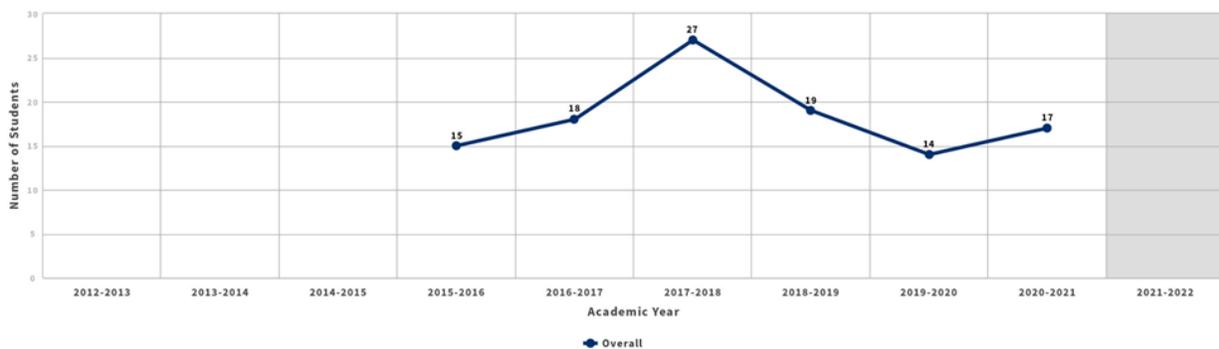
Data Reporting Notes:

Data are suppressed according to FERPA to protect students' personally identifiable information. Suppression takes place when too few students are included in the metric. Meaning, if there is not data, your program did not have a minimum of ten (10) students for this metric.

LaunchBoard data metrics lag in terms of academic year reporting. For your program review SWP metrics, report on the latest year available with a notation of the year. Meaning, if there is not data, your program did not have a minimum of ten (10) students for this metric.

CI. STRONG WORKFORCE PROGRAM STUDENTS

Report on students in your program who took at least 0.5 units in any single credit course or who had at least 12 positive attendance hours in any noncredit course(s) in the selected year or who enrolled in noncredit course(s) in Spring 2020 or any term in academic year 2021 and who enrolled on a TOP code that is assigned to a vocational industry sector in the selected year.



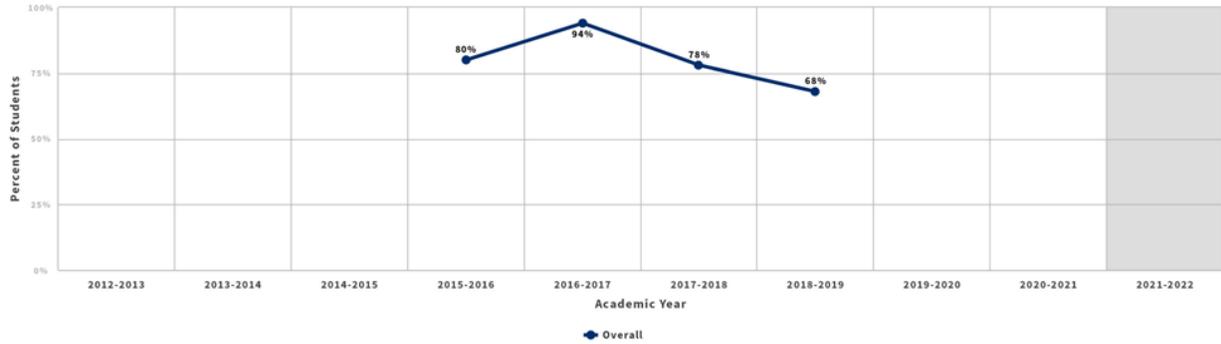
How may these metrics improve?

Although our numbers declined in the 2018-2020 years, enrollments are on an upward trend. We can work to improve these metrics by continuing to outreach to our local community about the Engineering Technology program. This includes tabling at career events at local high schools, as well as for prospective students at Las Positas College. Occasionally, a representative from LLNL also tries to attend to share the types of roles that an Engineering Technology graduate can have in industry. The program will also continue to be shared in all of our Introduction to Engineering courses – which have had excellent enrollment during the Fall 2023 semester. Students in these classes are exploring the field of engineering and many have never heard of this program before.

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C2. SWP Students Who Earned 9 or More Career Education Units in the District in a Single Year

Report on students in your program, the proportion who successfully completed nine or more career education semester units in the selected year within a single district



How may these metrics improve?

The Engineering Technology program includes coursework that is not considered “Career Education units”. In the optimal Engineering Technology pathway, students take on average 7 units a year that are considered Career Education. These courses are in both the Welding and Engineering departments. The other courses students are taking are math, physics and engineering courses that are not traditionally considered career education units but are integral to the engineering technology profession. Based on the pathway for this program, improvement of this metric does not indicate anything about the success of this CTE program.

C3. SWP STUDENTS WHO COMPLETED A NONCREDIT CTE OR WORKFORCE PREPARATION COURSE

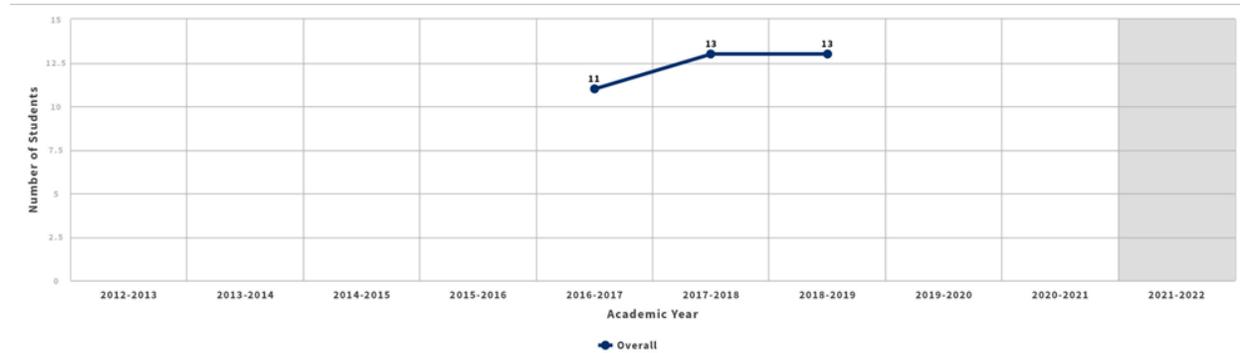
Report on students in your program with a noncredit enrollment on a CTE TOP code or a noncredit enrollment in a workforce preparation course, the proportion who completed a noncredit CTE or workforce preparation course or had 48 or more contact hours in a noncredit CTE or workforce preparation course(s) in the selected year

There is insufficient data to calculate this metric.

C4. SWP Students Who Earned a Degree or Certificate or Attained Apprenticeship Journey Status

Report on students in your program the number of unduplicated SWP students in your program who earned a noncredit certificate, Chancellor’s Office approved certificate, associate degree, and/or CCC baccalaureate degree on a TOP code assigned to a vocational sector and who were

enrolled in the district on any TOP code in the selected year or who attained apprenticeship journey status on a vocationally flagged TOP code in the selected year and who were enrolled at any community college at the start of the apprenticeship program on a vocationally flagged TOP code



How may these metrics improve?

We can improve these metrics by continuing to support our students throughout their time at LPC. For one of the challenging engineering classes that students must take just before completing their degree, we are encouraging them this academic year to take a non-credit math concurrent support class where both the math and engineering faculty can be there to assist with the math involved in the coursework. Faculty will continue to work closely with counseling and other members of our Engineering Tech team to check in with our students regularly to ensure they are meeting their academic and career goals, including that they have a student education plan created and that they complete paperwork necessary for graduation. This will become challenging as our program continues to grow, so implementing something like the automatic granting of degrees and certificates in Degreeworks, will aid in ensuring that students are able to get their degree after finishing the requirements and not if they miss a paperwork deadline.

C5. SWP STUDENTS WHO TRANSFERRED TO A FOUR-YEAR POSTSECONDARY INSTITUTION

Report on students in your program who earned 12 or more units at any time and at any college at any time up to and including the selected year and who exited the community college system, the number of students who enrolled in any four-year postsecondary institution in the subsequent year

No data was included in Launchboard.

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C6. SWP STUDENTS WITH A JOB CLOSELY RELATED TO THEIR FIELD OF STUDY

Report on students in your program who responded to the CTE Outcomes Survey and did not transfer to any postsecondary institution, the proportion who reported that they are working in a job very closely or closely related to their field of study.

Data are suppressed according to FERPA to protect students' personally identifiable information.

C7. MEDIAN ANNUAL EARNINGS FOR SWP EXITING STUDENTS

Report on students in your program who exited the community college system and who did not transfer to any postsecondary institution, median earnings following the academic year of exit

Data are suppressed according to FERPA to protect students' personally identifiable information.

C8. MEDIAN CHANGE IN EARNINGS FOR SWP EXITING STUDENTS

Report on students in your program students who exited and who did not transfer to any postsecondary institution, median change in earnings between the second quarter prior to the beginning of the academic year of entry (for the first time ever as a non-Special Admit or return to any community college after an absence of one or more academic years) and the second quarter after the end of the academic year of exit from the last college attended.

There is insufficient data to calculate this metric.

C9. SWP EXITING STUDENTS WHO ATTAINED THE LIVING WAGE

Report on students in your program who exited college and did not transfer to any postsecondary institution, the proportion who attained the district county living wage for a single adult measured immediately following academic year of exit.

Data are suppressed according to FERPA to protect students' personally identifiable information.