PROGRAM REVIEW Fall 2021

Program: **Engineering**
Division: **STEM**
Date: **31 October 2021**
Writer(s): **Keith Level**
SLO/SAO Point-Person: **Keith Level**

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 be used to inform the campus and community about your program. It will also be used in the processes of creating Division Summaries, determining College Planning Priorities and allocating resources. A final use is to document fulfillment of accreditation requirements.

Please note: Program Review is NOT in itself 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 on program status during the 2021-22 academic year. It should describe plans starting now and continuing through 2022-23.

Sections: There are three sections to this document. Sections and questions identify the name of the committee or office that will use the information and where you can get additional help.

- The first section focuses on general program reflection and planning.
- The second section is a review of curriculum, to be filled out only by programs with curriculum.
- The third section is a review for CTE programs, to be filled out only by these programs.

Topics: The Program Review Glossary defines key terms. Writers should review this glossary before writing: https://bit.ly/2LqPxOW

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

A list of contacts for help with specific sections is provided on the Program Review website under the "tools for writers" tab. [https://bit.ly/3fY7Ead]

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) Optional/suggested: Communicate with your dean while completing this document.
4) Send an electronic copy of this form to Nadiyah Taylor and your dean by when?

Links:

Program Review Home Page
Fall 2020 Program Reviews
Frequently Asked Questions

Section One: Your Program In 20-21 – Please check N/A where relevant

A. Accomplishments: How did your Program's accomplishments during AY20-21 support the newly revised college mission, the goals of the Educational Master Plan, and/or the President's Call to Action on anti-racism? *Areas to consider include impacts to students by race/ethnicity, gender, sexuality, age, or disability status, or those disproportionately impacted by the shift to remote instruction and services.*

- *College Mission*
- *Educational Master Plan*
- *Presidential Task Force: Call to Action*

Description	Mission	Master Plan	Presidential Task Force
1 Provided a way for ENGR 44 (Intro to Circuit Analysis) students to complete lab-based exercises using kits at home, provided through some CARES act money and leadership from adjunct faculty member Mark Newton		X	
2 With assistance from LPC IT, provided many different students necessary technology (computers, software) to perform computer-based lab experiments from home during the pandemic	X	X	X
3			
4			
5			
6			

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B. Challenges, Obstacles and Needs: What significant challenges or obstacles did your Program face during AY20-21 in supporting the newly revised college mission, the goals of the Educational Master Plan, and/or the President's Call to Action on anti-racism? *Areas to consider include impacts to students by race/ethnicity, gender, sexuality, age, or disability status, or those disproportionately impacted by the shift to remote instruction and services.*

_____N/A

Description	Mission	Master Plan	Presidential Task Force
1 **Reduction of FTEF Allocation from 3.78 to 3.30 (12.5% reduction).** In my community college teaching experience, this type of reduction takes a long time to recover from. When this type of reduction is based on CAH reduction, its effects on a small department like Engineering is much more	X	X	

significant than its effects on larger departments.			
2 **Taught nearly all courses by way of distance learning**, with minimal preparation time. While nearly the whole college did the same, teaching engineering (and engineering labs) poses some unique challenges.	X	X	
3 **Having the Engineering coordinator position compensated with only 1.0 CAH unassigned time.** This item has been part of at least the last 5 Program Reviews, and, in spite of some changes to the unassigned time compensation campus-wide, continues to be an issue.	X		
	X	X	X
4 **An uneven approach to Engineering Transfer vs. Engineering Technology at LPC.** Both Engineering Transfer and Engineering Technology fall under the responsibility of the "Engineering Coordinator." Engineering Technology has an active Advisory Committee, with several meetings each year, to discuss all issues associated with the program. New courses are constantly being proposed and introduced into the program (eg, ENGR 50, Vacuum Technology) Engineering Transfer, in contrast, is never discussed at an Advisory Committee meeting. The FTEF allocation to ENGR—which lumps both transfer and ET courses under one category—decreased by 12.5% (3.78 to 3.30) from 2020 to 2021. Two fewer Engineering Transfer courses are being offered this academic year, compared to a year ago, at the same that ENGR 50, which amounts to 6.50 CAH, was included in the schedule. It is unfortunate that Engineering Transfer course offerings have to compete with ET course offerings in this zero-sum type of approach. ET was created building from what Engineering Transfer had already established—using mainly pre-existing courses (eg, ENGR 1, ENGR 23, MATH 30), and adding a few custom courses (ENGR 37, ENGR 50, WLDT 10). More attention needs to be directed towards keeping both Engineering Transfer and ET programs healthy.			
6			

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C. Planning: What are the most important plans, either new or continuing, for your Program?

_____N/A

Plan	New	Continuing	Short term	Long term
Planning for Keith Level's retirement (tentative for June 2022)	X		X	
Reviving lagging enrollment numbers, increase enrollment to a point where additional sections of courses can be offered again (ie, increase FTEF for ENGR courses)		X		X
Hiring a replacement full-time faculty member in a timely manner, planning for this transition	X		X	
Resolve the need for more lab space and more storage space, for equipment and other course-related materials.		X		X

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D. How have your program's interactions with the larger campus systems benefitted your students? For example, working with allocation committees, participation on committees, etc.

_____N/A

Campus system or Committee	How has it benefitted your students?
CTE Committee	Provided opportunities for Perkins Act funds to support equipment used in Engineering Technology courses.

E. If you have outreached to students in your department, program or classes, please share information about what you discovered and how you have used the feedback

_____N/A

Describe student outreach used to gather feedback? For example, through surveys, conversations, etc. Surveys using Google Forms and Google Survey	
What did you learn? Student goals and intents when beginning the Engineering Transfer track Where students are transferring to after LPC	
How will you use the feedback? Include this data with that collected from other years, to determine overall trends. This type of transfer data has been collected for the last 14 years by Keith Level.	

Section Two: Data Analysis – Quantitative and Qualitative

A. IR Data Review: Describe any significant trends in your program's data provided by the office of Institutional Research 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.) You may also discuss any other data used by your program for decision-making and planning.

- IR Data packets are available here: https://bit.ly/2IYaFu7 - will be updated with fall 21 data

- Course Success Rates Dashboard can be found at the bottom of this page: https://bit.ly/2Y9vGpl

I think it's difficult to look at trends for Fall 2020, compared to earlier Fall semesters, without considering the effect of Covid-19 on enrollments, success rates, and other measures. Keeping this in mind, some of the trends include:

Student Headcounts and Enrollments in Fall 2020 are down from Fall 2019, but comparable to numbers from 2017 and 2018.

The percentage of female students in the program in Fall 2020 increased to 20% of all Engineering students, the highest percentage in the last 5 years.

The percentage of all students 19 years old or younger dropped to its lowest percentage in the last 5 years, at 35% of all students.

In Race-Ethnicity, percentages of LatinX students increased to 41% of all students, the highest percentage in the last 5 years (and likely the highest percentage ever at LPC). At the same time, percentages of white students decreased to 26% of all students, the lowest percentage in the last 5 years.

The percentage of Full-time students enrolled in at least 15 units dropped to 19%, the lowest percentage in 5 years, though very likely influenced by the distance education methods dictated by Covid 19.

The numbers of students successfully transferring to four-year universities in Spring 2021 was comparable to past years, which is a positive given Engineering's lower success rate for course completion, and the challenges posed by distance education.

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. There may be many valid reasons a program does not meet the Program Set Standard; when a program does not meet this standard, they are simply 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:

- *Did your program meet its program-set standard for successful course completion?*
  *___yes __**X**__no*

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

ENGR dropped to a 64% success rate, below its set standard of 67%. Part of this (slightly) lower success rate may be due to the pandemic, and the negative impact on students majoring in Engineering. Several engineering classes involve extensive laboratory exercises, which are particularly challenging to conduct in a distance education format. Engineering is also one of the most challenging academic disciplines; adding distance education to the Engineering major can only increase the challenges to students.

SLOs/SAOs:

For assistance with these questions, contact the SLO Committee Chair. [https://bit.ly/3fY7Ead]

Each year programs must discuss how their PSLOs, CSLOs, or Service Area Outcomes (SAOs) support the College Mission. This helps us to see how our students are progressing in their learning.

You should complete ONE of the following three sections. Please choose the option that is most appropriate for your program:

C1: Instructional Programs with PSLOs
C2: Instructional Programs without PSLOs or with Special Circumstances
C3: Non-Instructional Programs

Go directly to the section you chose. If you are not sure which option to pick, contact the SLO Committee Chair or Program Review Committee Chair for assistance.

C1: Instructional Programs with PSLOs

PSLO Assessments:

(1) Please list the PSLO(s) that were reviewed in this last cycle and explain why these were chosen.

(2) What percentage of faculty completed the planned assessments? (run Faculty Participation report from last year). _____%

(3) Did you get the assessment data that you needed to complete this report? If not, then describe the barriers that you can identify. _____YES _____No

N/A

(4) Discuss the findings of the PSLO(s) that were up for review last year (according to your 3-year planning template). What conclusions can be drawn about student learning?

N/A

(5) Was the data disaggregated and, if so, on what parameters? What, if any, equity issues emerged?

N/A

(6) List changes that you plan on making to improve student learning and address inequities.

N/A

(7) Discuss the challenges, if any, to improving student learning and equity. You may refer back to items listed in Section 1B.

N/A

(8) Are you planning on revising on your 3-year planning template? If so, describe.
_____YES _____No

N/A

C2: Instructional Programs without PSLOs or with Special Circumstances

CSLO Assessments:

Student Learning

(1) List the CSLO(s) that were up for review last year (according to your 3-year planning template) and explain why your department selected these CSLOs for review.

ENGR is, and has been, deficient in maintaining SLO assessments, and I assume responsibility for that. Assessments were made for ENGR 1 (*Introduction to Engineering*) during Spring 2021, and the remaining questions here are based on those assessments. Note that no Faculty Participation Report exists for Spring 2021.

(2) What percentage of faculty completed the planned assessments? (run Faculty Participation report from last year). _____%

(3) Discussion-based analysis of student learning: Using the CSLO data and answers to the reflection questions, what type of conclusions can be made about student learning?

Based on the assessments for how many ENGR 1 students could accurately identify and distinguish between the different Engineering disciplines, 20 of 34 (59%) students were at an Above Average or Mastery level.

(4) Describe the pertinent findings. What, if any, equity issues emerged?

It is difficult to discern the effects of equity on these results. Providing many students with laptop computers and software provides more equity, but it is difficult to measure its direct effect.

(5) List changes that you plan on making to improve student learning.

Possibly continuing to record lectures on Zoom, even after returning to 100% face-to-face instruction, to provide students alternate access to course content.

Continue to use methods specifically developed during distance education (eg, extensive use of document cameras to demonstrate problem solving techniques, providing take home kits for lab exercises), even after fully returning to face-to-face instruction.

Assessment Process: To be completed by the department/program or the SLO Coordinator

(1) List changes that you plan on making to improve student learning and address inequities.

This will likely be done by my predecessor, after I retire:

Establish a comprehensive strategy to address CSLOs for all courses, and establish 1 or more PSLOs for Engineering.

I personally believe that a PSLO which measures how many LPC Engineering Transfer students are successful in their transfer to a 4-year university (and how many are not successful), would be a particularly useful metric to include here. Because this type of metric is not easily measured, and does not fit into how SLOs are used, means that this type of data goes unnoticed. This is a far more important metric of the effectiveness of the program, than is, for example, measuring how one class answers one question on a final exam. If students no longer successfully transfer to four-year universities, the Engineering Transfer program would no longer exist.

(2) Discuss the challenges, if any, to improving student learning and equity. You may refer back to items listed in Section 1B.

The pandemic has had the effect of shrinking the Engineering Transfer program at LPC. Regaining ENGR FTEF, transitioning back to face-to-face instruction, and hiring a new full-time faculty member are all significant challenges, but when occurring all at the same time, present a particularly daunting challenge. It would be a mistake to assume that "everything is back to normal" given these conditions.

I view equity as students having equal opportunity to succeed in their classes, independent of their socio-economic conditions. The pandemic has challenged this in many ways. Retaining many of the distance education methods intended to provide equity should be retained, even after returning fully to face-to-face instruction . I don't view equity as "guaranteed success" for any student, and equity in engineering education can be difficult to discuss, because the academic rigor in the discipline means that many students do not succeed. Providing equal access to resources and the opportunity to succeed should be the emphasis.

(3) Are you planning on revising your 3-year planning template? If so, describe.

_____YES _X____No

Uncertain at this time, this will likely become the responsibility of the new Engineering instructor.

C3: Non-Instructional Programs

SAO Assessments:

Support of Student Learning

(1) List the SAO(s) that were up for review last year (according to your 3-year planning template) and explain why your department selected these SAOs for review.

N/A

(2) What percentage of faculty completed the planned assessments? (run Faculty Participation report from last year). _____%

(3) Discussion-based analysis of student learning: Using the SAO data and answers to the reflection questions, what type of conclusions can be made about student learning?

N/A

(4) Describe the pertinent findings. What, if any, equity issues emerged?

N/A

(5) List changes that you plan on making to improve student learning.

N/A

Assessment Process: To be completed by the department/program or the SLO Coordinator

(6) List changes that you plan on making to improve student learning and address inequities.

N/A

(7) Discuss the challenges, if any, to improving student learning and equity. You may refer back to items listed in Section 1B. Are you planning on revising on your 3-year planning template and, if so, describe?

N/A

(8) Are you planning on revising on your 3-year planning template? If so, describe.

_____YES _____No

N/A

Program Review Suggestions (optional): What questions or suggestions do you have regarding this year's Program Review forms or process?

It's still unclear how Program Review is used for anything, other than to satisfy the scrutiny of an Accreditation review. The first sentence states that " Program Review is NOT in itself a vehicle for making requests". I think there needs to be more clarification, and elaboration, for what purpose Program Review actually serves. For all of the time that I've spent writing Program Reviews, I cannot honestly say that very much has tangibly changed because of it. The one exception to this might be the Unassigned Time allocation for faculty, but ENGR was awarded the very minimum amount, of any campus program, when allocations were clarified in early 2021.

Section Three: Curriculum Review (Programs with Courses Only)

For assistance with this section, contact the Curriculum Committee Chair. [https://bit.ly/3fY7Ead]

The following questions ask you to review your program's curriculum. To see the last outline revision date and revision due date:

1. Log in to CurricUNET
2. Select "Course Outline Report" under "Reports/Interfaces"
3. Select the report as an Excel file or as HTML

A. **Title V Updates [Curriculum Committee]: Are any of your courses requiring an update to stay within the 5-year cycle? List courses needing updates below.** *Reminder: updates to course title or units, and course deactivations, will require updating any program they are associated with. List programs requiring updating in question (B).*

_____YES __**X**___No

Course Name & Number

B. **Degree/Certificate Updates [Curriculum Committee]: Are there any programs requiring modification? If yes, list them below.**

_____YES __**X**___No

Certificate or Degree

C. Are there any courses or programs for which a non-mandatory update is planned?

_____YES ___**X**___Not at this time

If yes, explain details, rationale, or any support that might be helpful

D. Does your program plan to create any new courses or programs this year?

__X___YES ____ ___No

If yes, please provide details and the rationale

There are some developmental steps in creating a workshop in Vacuum Technology, for use in the Engineering Technology AS degree program. The rationale is based on recommendations from the Engineering Advisory Committee. This workshop may lead to a course being developed.

Section Four: CTE Updates

(CTE Programs Only)
Vicki Shipman will provide you with or support any data needs

A. Labor Market Conditions: Examine your most recent labor market data (within the last 2 years).

1) **Does your program continue to meet a documented labor market demand?**
__X__YES _____No

2) Does this program represent a training need that is not duplicated in the college's service area?
_X__YES _____No

Please explain

From the *EMSI Occupation Overview*, regional employment in the Bay Area is higher than the national average.

The Engineering Technology (ET) program is not duplicated in the college's service area. Though several of the required courses for the ET degree are also part of other majors, the specific combination of ENGR, MATH, WLDT, PHYS and other courses are unique to ET.

B. Advisory Boards: Has your program complied with advisory board recommendations?
_X_YES _____No

If not, please explain.

C. Strong Workforce Program Metrics: Utilizing LaunchBoard, review the Strong Workforce Program Metrics. Review the data and then answer the following questions.

C1. Does your program meet or exceed the regional and state medians **for increased enrollments, completions, and/or transfer since your last program review**?

_____YES _____No

If not, what program improvements may be made to increase this metric?

Engineering Technology has provided relatively modest numbers of graduates, and job placements, given that the program is now about 6 years old. It's difficult to determine if the lack of growth in recent years is a direct result of the pandemic, but there likely were some negative effects.

Randy Pico, a Director from Lawrence Livermore National Labs, at the most recent Engineering Advisory committee meeting, expressed frustration at why the numbers of graduates, and job placements, were not larger.

Based on my involvement in the ET program, from its inception in 2014, here are my recommendations to increase both numbers of graduates, and numbers of job placements:

1. Increase, and diversify, methods for recruiting students into the Engineering Technology (ET) degree program. This item alone, will have the biggest impact on the program's success, in my opinion. Recruit more and better students, everyone down the line will benefit.

2. Market the ET program more effectively; use recent graduates as examples of success stories.

3. Make the program more competitive. Establish some type of criterion (eg, GPA, skills test) which needs to be achieved before continuing in the program.

As a classroom instructor in ET, I don't have much control over items 1 an 2 above, but I have seen over the last 6 years, a change in the quality of student showing up in ET courses.

LaunchBoard data unavailable

C2. Does your program meet or exceed the regional and state medians **for students gaining employment in their field of study**?

_____YES _____No

If not, what program improvements may be made to increase this metric?

LaunchBoard data unavailable

C3. Does your program meet or exceed the regional and state medians **for student employment rates after leaving the college**?

_____YES _____No

If not, what program improvements may be made to increase this metric?

LaunchBoard data unavailable

C4. Does your program meet or exceed the regional and state medians **for increased student earnings and median change in earnings?**

_____YES _____No

If not, what program improvements may be made to increase this metric?

LaunchBoard data unavailable