LMC Program Review Year 3 Update 2019-2020

Instructional Unit Name: ENGINEERING

Introduction

In 2017-2018, all departments/programs completed a Comprehensive Program Review (CPR), in which goals were set for the 2017-2022 program years. Los Medanos College (College) is now in year three of a five-year review cycle. New to this program review cycle is the passage of the State's *Vision for Success* plan which establishes system-wide goals that can only be attained by each department contributing to college-level goals aligned with the state plan. Toward that end, the *Contra Costa Community College District Strategic Plan* (*CCCD Strategic Plan*) adopted by the Governing Board at its June 2019, meeting, aligns with the *Vision for Success* and plans are underway to ensure that the *Los Medanos College Educational Master Plan (LMC EMP)* also supports college and state goals. The intent is to direct College efforts toward a singular and coordinated set of goals.

The *Vision for Success* directs each college to increase degree and certificate completion and increase student transfers, improve time to completion, increase job placement in field of study, narrow achievement gaps and establishes targeted goals in five primary areas as follows:

Goal #1 Increase by 20 percent the number of CCC students annually who acquire associates degrees, credentials, certificates, or specific skill sets that prepare them for an in-demand job.

Goal #2 Increase by 35 percent the number of CCC students' system-wide transferring annually to a UC or CSU.

GOAL #3 Decrease the average number of units accumulated by CCC students earning associate's degrees, from approximately 87 total units (the most recent system-wide average) to 79 total units—the average among the quintile of colleges showing the strongest performance on this measure

GOAL #4 Increase the percent of exiting CTE students who report being employed in their field of study, from the most recent statewide average of 69 percent to an improved rate of 76 percent—the average among the quintile of colleges showing the strongest performance on this measure in the most recent administration of the CTE Outcomes Survey.

Goal #5 Reduce equity gaps across all of the above measure through faster improvements among traditionally underrepresented groups as identified by the college.

The College can only meet its local and state goals with the contribution of each department's efforts. As noted, the intent is to direct College efforts towards a singular and coordinated set of goals to garner greater efficiencies and avoid duplication of effort.

The *Program Review Year 3* Update includes five components with specified timeframes (not in chronological order) for draft and completion:

Item 1. Program Update (October 1 – October 31)
Provide an update to the department's 2017-18 CPR

Item 2. Setting the Vision for Success Goals 2021-22 (November 1 – November 27)
Department/program alignment of goals, action steps, timeline, responsible party and next steps – all tied to the *Vision for Success* indicators. For ease of reference, the *Vision for Success* indicators are included in this section.

Item 3. Assessment Date and Effectiveness (August 26 – September 30)
Status report on the review and assessment of courses and next steps

Item 4. Course Outline Updates (August 26 – September 30)
Status report on the review and assessment of Course Outline of Records and next steps

Item 5. Resource Needs (February 1 – February 28)
Resource needs to meet goals, if any.

The table below shows a list of the above components in chronological order. The intent is to complete sections of Program Review by these dates to better assess and inform the process.

Date	Program Review Update Component
August 26 – September 30	**Item 3.** Assessment Date and Effectiveness Status report on the review and assessment of courses and next steps.
August 26 – September 30	**Item 4.** Status report on the review and assessment of Course Outline of Records and next steps.
October 1 – October 31	**Item 1.** Provide an update to the department's 2017-18 CPR
November 1 – November 27	**Item 2.** Department/program alignment of goals, action steps, timeline, responsible party and next steps – aligned with the *Vision for Success* indicators.
February 1 – February 8	**Item 5.** Resource Needs

1. Program Update (Oct 1 – Oct 31)

1a. Provide any important changes or updates within your program since your last CPR. (New degrees, new curriculum, staffing changes, etc.)

None

1b. Please address the following enrollment data provided for your program.

1.b.1. What are the enrollment trends over the past 3 years, beginning with Fall 2017? (Please address census enrollment, census fill rate, and productivity (Ftes/Ftef)

Level 1	Level 2	Level 3	Census Enrollm..	Census Fill Rate	Ftes/Ftef
2017-2018	ENGIN		194.0	71.9%	11.9
2018-2019	ENGIN		210.0	77.8%	13.1
2019-2020	ENGIN		84.0	70.0%	11.3
Grand Total			488.0	73.9%	12.3

In Engineering, the Census Enrollment is fluctuating slightly, and the Census Fill Rate decreases as the Census Enrollment decreases. Productivity varies in proportion to enrollment as fewer students decreases productivity. This suggests that student demand for Engineering courses is in flux. Are the numbers of students interested in Engineering changing? Is the availability of Engineering courses at DVC (LMC's competitor for Engineering students) changing? Are LMC students unable to enroll in the Engineering courses they want due to scheduling conflicts?

1.b.2. What does the data suggest in terms of future needs/directions?

Due to the current numbers of Engineering students, LMC can offer only one section of each Engineering course, and not every Engineering course is offered every semester. With only one section per course, scheduling conflicts are likely to occur. Could a scheduling change increase enrollment (and also productivity)? Is there something else we could do to improve LMC's ability to compete with DVC for Engineering students?

1c. Provide a brief update of your program's goals as listed in your **(CPR)** 2017- 2018. Given these goals, please provide a brief update on: (a) Goals completed since their submission in 2018, and the impact of that completion on program effectiveness; (b) Goals abandoned with an explanation of why they were abandoned and (c) Goals still in progress or modified to be achieved by 2021-2022. Please include action steps, timeline, and responsible parties.

Goals	Completed/ Abandoned/ In Progress/ Modified	Impact/ Explain/ Action Steps	Timeline/ Responsible Parties
Goal 1: Invest in new technology, replace old equipment and repair broken one.	In Progress	This goal has stalled due to lack of funds.	Francesca Briggs Kurt Crowder Bob Moore

Invest in new technology, replace old equipment and repair broken one.			Steve Goldenberg, On going
Goal 2: **Increase the number of school laptops to accommodate class size and invest in new ones, which can support currently implemented engineering software**	In Progress	This goal has stalled due to lack of funds.	Francesca Briggs Steve Goldenberg, On going
Goal 3: **Recruit engineering students for independent study/projects in order to enhance their learning and facilitate their successful transition to local industry/national labs.**	**In Progress**	Progress has been hindered by the demands of a full teaching load and faculty responsibilities.	Francesca Briggs, On going

For CTE programs only:

1c. Community and Labor Market Needs (Link Ed Code 78016, Title 5, 51022)

N/A

1d. Advisory Board Update and Analysis (CTE related only) Include dates of Advisory Board meetings in 2018-2019, and those completed or planned in 2019-2020.

N/A

2. Setting Vision for Success Goals for 2021-22 (Nov 1—Nov 27)

The *Vision for Success* directs each college to increase degree and certificate completion and increase student transfers, improve time to completion, increase job placement in field of study, narrow achievement gaps and establishes targeted goals in five primary areas. The College can only meet its local and state goals with the contribution of each department's efforts. As noted, the intent is to direct College efforts towards a singular and coordinated set of goals to garner greater efficiencies and avoid duplication of effort.

2a. The following table lists the *Vision for Success* indicators that we must align to as a college and as a district. Please look at your program data (Tableau) for each of the following *Vision for Success* indicators. Please address all indicators that are relevant to your program, set your program goal, indicate the action steps, timeline and responsible parties to achieve program goals.

Vision for Success Indicators and ACCJC Indicator	Program Set Goals for 2021-2022	Action Steps	Timeline	Responsible Parties	Notes
Course Success	ENGIN 82.3%				
Degrees (AA, AS, ADT)	ENGIN 3.6				
Certificates of Achievement	N/A				
Unit Reduction	N/A				
CTE Jobs	N/A				

2b. The Vision for Success Goal 5—Equity. The College has identified three disproportionately impacted (DI) populations: African-American, economically disadvantage students (low income), and foster youth students. The College's goal is to reduce the equity achievement gap on course success for disproportionately impacted (DI) student populations. Please look at your program data (Tableau) for each of the following DI population. Please pick one or more DI populations that are relevant to your program, set your program goal, indicate the action steps, timeline and responsible parties to achieve program goals.

Course Success by DI Population	Program Set Goals for 2021-2022	Action Steps	Timeline	Responsible Parties	Notes
African American	75%	The goal was set by taking the average of the last 3 years and adding 2%. Action Steps:	ongoing	Francesca Briggs	

		Zero Textbook Cost (ZTC) options EOPS MESA interactions AEW (AcademicExcellence Workshops)			
Low Income	86%	The goal was set by taking the average of the last 3 years and adding 2%. Action Steps: Zero Textbook Cost (ZTC) options EOPS MESA interactions AEW (AcademicExcellence Workshops)	ongoing	Francesca Briggs	
Foster Youth	94%	The goal was set by taking the average of the last 3 years and adding 2%. Action Steps: Encourage group work and community-building (the laboratory work especially assists with this goal)	ongoing	Francesca Briggs	

3. Assessment Update and Effectiveness (August 26-Sept 30)

a. Please review the data provided on assessment status of courses in your discipline in Cycle 2 (2017/18-2020/21), if there were any courses that were not assessed in Cohorts 1 and 2, please (a) list them, (b) explain why they were not assessed, (b) when are you going to assess them, and (c) who is going to assess them.

Course	Reason course was not assessed	When course will be assessed	Faculty Responsible for Course Assessment
ENGIN 22	assessment data collected and report will be written ASAP	ASAP (Fall 2019)	Francesca Briggs
ENGIN 30	assessment data collected and report will be written ASAP	ASAP (Fall 2019)	Francesca Briggs
ENGIN 36	assessment data collected and report will be written ASAP	ASAP (Fall 2019)	Francesca Briggs
ENGIN 46	assessment data collected and report will be written ASAP	ASAP (Fall 2019)	Francesca Briggs
ENGIN 10	assessment data collected and report will be written ASAP	ASAP (Fall 2019)	Francesca Briggs
ENGIN 20	assessment data collected and report will be written ASAP	ASAP (Fall 2019)	Francesca Briggs

b. Discuss the results of any outcomes assessments (e.g. CSLO) performed this year. What changes, if any, are planned to improve student success?

This year (2019-2020) our department has scheduled the assessment of Chem 25, Engin 25, Engin 38, Phys 37, and Phys 41.

Engin 25 and Engin 38 are not offered this semester (Fall 2019), so they will be assessed the next time they are offered.

4. Course Outline of Record Updates (August 26 – Sept 30)

Please review the data provided on the status of COORs in your discipline. (Note: These data do not reflect courses submitted after May 2019. For each COOR that has *not* been updated since May 2019, please indicate the faculty member responsible for submitting the updated COOR to the Curriculum Committee by **November 1, 2019**.

Course	Faculty Responsible for COOR Update

ENGIN 10	Francesca Briggs
ENGIN 20	Francesca Briggs
ENGIN 22	Francesca Briggs
ENGIN 30	Francesca Briggs
ENGIN 36	Francesca Briggs
ENGIN 46	Francesca Briggs

Impact of Resource Allocation

If you have received funding via the Resource Allocation Process, you will be asked by the Office of Business Services how the resource helped you in achieving your program goals.

5. Resource Needs (Feb 1 – Feb 28)

Resource needs to meet goals, if any. If there are no requests, this section may be skipped.

Faculty/Staff Resource Request

Department/Unit Goal - Reference #	Strategic Goal and/or Objective - Reference #	
Department/Unit Name	**Position Name/Classification**	**FTE**

Position Type	Funding Duration	Funding Source	Est. Salary & Benefits
☐ Faculty R/T ☐ Classified ☐ Manager ☐ Student	☐ On-going/Permanent ☐ One-time	☐ Operations (Fund 11) ☐ Other	

Justification:

Operating Resource Request

Department/Unit Goal - Reference #	Strategic Goal and/or Objective - Reference #
Physical Science/Engineering/Goal #2	Vision for Success Goal #2, #4 and #5
Department/Unit Name	**Resource Type**
Physical Science/Engineering	☑ Equipment ☑ IT Hardware/Software ☐ Supplies ☐ Facility Improvement ☐ Service/Contract ☐ Other

General Description	Est. Expense
Thirty new laptop computers are requested in order to meet the minimum system requirements for SolidWorks 2020, 3D computer modeling software implemented in Engin-025, Engineering Graphics. Minimum system requirements are listed here and are needed in order to ensure computer modeling performance and design features work correctly:	$45,000.00

	SOLIDWORKS 2018 (EDU 2018-2019)	SOLIDWORKS 2019 (EDU 2019-2020)	SOLIDWORKS 2020 (EDU 2020-2021)
Operating Systems			
Windows 10, 64-bit	✔	✔	✔
Windows 8.1, 64-bit	✔	✘	✘
Windows 7 SP1, 64-bit	✔	✔	✔ (**End of Life**: SW2020 SP5)
Virtual environments	Supported virtual environments (hypervisors)		
Hardware			
Processor	3.3 GHz or higher		
RAM	16 GB or more PDM Contributor or Viewer: 8 GB or more		
Graphics Card	Certified cards and drivers		
Drives	SSD drives recommended for optimal performance		

Justification:

SolidWorks is not backward compatible, therefore students using earlier releases of SOLIDWORKS on school laptops will not be able to open any newer files in class.

Program Review Goal #2: "Increase by 35 percent the number of CCC students' system-wide transferring annually to a UC or CSU". SOLIDWORKS is the most widely used 3D CAD package in education and industry today. Learning SOLIDWORKS helps our students developing the design and engineering skills they need to be successful for the next step in their education, or when it is time to enter the job market. This assumes providing our students with properly working SolidWorks stations.

Program Review Goal #4 Increase the percent of exiting CTE students who report being employed in their field of study". A properly working SolidWorks environment would facilitate student learning and increase the percentage of CTE students working as CAD designers, not just as engineers.

Program Review Goal #5: "Reduce equity gaps across all of the above measure through faster improvements among traditionally underrepresented groups as identified by the college". Traditionally underrepresented groups of students would benefit from up to date SolidWorks stations, as a way to close the gap with respect to students who can afford to purchase the latest SolidWorks Students edition for home.

Based on the Engin-025 **Catalogue Description**: "this course progresses to high-powered, 3D, computer generated graphics, and even how to animate assemblies of interacting mechanical parts". Complex CAD graphics, such as assemblies, and their animation simply cannot be achieved without a proper SolidWorks station, which include a proper processor, graphic card and RAM.

Based on **PSLO B**: "students will be able to design a system, component, or process to meet desired needs". Students cannot learn and design complex CAD systems if the hardware and software are not up to date. SolidWorks freezes when trying to handle complex engineering drawings.

Based on **CSLO #2**: "students will be able to generate engineering graphics with CAD programs, including solid modeling."

Student enrollment for Engin-025 has been increased from 24 to 30 students in total throughout the last few years. However, 22 older laptops are available to our students only.

Professional Development Resource Request

Department/Unit Goal - Reference #	Strategic Goal and/or Objective - Reference #

Department/Unit Name	Resource Type
	☐ Conference/Meeting ☐ Materials/Supplies ☐ Online Learning ☐ IT Hardware/Software ☐ Other

General Description	Est. Expense

Justification: