

# LMC Comprehensive Program Review

## Instructional Units

2017-2018

Program/Discipline:     Engineering    

The following provides an outline of the required elements for a comprehensive unit/program review for Instructional Programs and Units. Upon completion of this report, please upload your document in the unit/program review application data/documents tab.

### 1. Program Changes

1.1. How have your degree and certificate offerings changed over the last 5 years? ( e.g. new programs, discontinued or major changes to existing programs) Engin 38 is now offered in the Fall.

1.2. What changes are you planning to your degree and certificate offering over the next 5 years? What is the rationale for the anticipated changes? Will these changes require any additional resources?

We plan on adding a Technical Writing course. We also plan on acquiring new cutting edge lab equipment. Our goal is to make our engineering students knowledgeable and competitive in terms of new engineering technology and to create a clear pipeline to transfer, from student to their successful transfer to four-year colleges and universities and/or to local national labs and industries.

### 2. Degree and Certificate Requirements

**Please review the data provided on all degree/certificate completions in your program, including locally approved College Skills Certificates from Fall 2012—Spring 2017.**

2.1. For each degree/certificate offered, map a pathway to completion of courses within the major in a maximum of 4 semesters, assuming a maximum of 6-10 units of major courses within a semester. Use the following format:

Name of Degree or Certificate				
Semester	Semester 1	Semester 2	Semester 3	Semester 4
<b>List Courses Needed for Degree or Certificate in each semester.</b>	Math 50 Engin 10	Math 60 Phys 40 Engin 25 Engin 20	Math 70 Phys 41 Engin 22 or 30 or 36 or 38	Math 75 Math 80 Phys 42 Engin45 or 46

### 3. Frequency of Course Offerings

Please review the data provided on frequency of all courses offered in your discipline in the last 2 years (Fall 2015-Spring 2017).

3.1. If a course has not been offered in the past two years, but is required for a degree or certificate, please explain why it has not been offered, and what the plan is to offer it in the future.

N/A

3.2. If the course is not required for a degree or certificate, is the course still needed in the curriculum or is the department considering deleting it?

N/A

3.3. For the next two years, project how frequently your program intends to offer each course. Please provide a rationale for any major changes from the last 2 years that you anticipate.

Course	Estimated Number of Sections Offered by Semester			
	Fall 2018	Spring 2019	Fall 2019	Spring 2020
<i>COURSE 001</i>				
<i>COURSE 002</i>				
<i>COURSE 003</i>				
Rationale for any Major Changes				
No Changes with respect to the current offering.				

## 4. Existing Curriculum Analysis

### 4.1. Course Outline Updates

Please review the data provided on the status of COORs in your discipline. (Note: This data does not reflect courses submitted after May 2017.) For each COOR that has *not* been updated since Spring 2012, please indicate the faculty member responsible for submitting the updated COOR to the Curriculum Committee by April 18, 2018.

Course	Faculty Responsible for COOR Update
COURSE 001	
COURSE 002	
COURSE 003	

N/A

### 4.2. Course Offerings/Content

How have your courses changed over the past 5 years (new courses, significant changes to existing courses)?	The courses themselves have not undergone large changes, but the PSLOs have been revised.
How have these changes enhanced your program?	The new PSLOs will permit us to focus more on student needs.

## 5. New Curriculum Analysis

**5.1. If you are creating new degrees or certificates in the next 5 years: (Indicate N/A if no new degrees or certificates are planned.)**

What additional courses will need to be created to support the new degree or certificate?	N/A
What significant changes to existing course content would need to be made to support the new degree or certificate?	N/A

## 6. Advisory Board Update (For all CTE TOP coded programs)

Give an overview of the current purpose, structure, and effectiveness of your Advisory Board. Include: membership, dates of last meetings over the past two years.

N/A

## 7. Assessment Effectiveness:

### 7.1. Course Level Assessment

**Please review the data provided on assessment status of courses in your discipline in Cycle 1 ( 2012-2017).**

7.1.1. If there were any courses that were not assessed in Cycle 1, please explain why they were not assessed.

N/A

7.1.2. If a course was not assessed in Cycle 1 because it was not offered, what is the future of that course?

N/A

7.1.3. Course level assessment should be meaningful, measurable and manageable. Overall, reflecting on the course level assessment, please rate the degree to which you feel your assessments meet these 3M's.

Meaningful: 3

1	2	3
The assessment was not meaningful in collecting data or information that supported course improvement or pedagogical changes.	The intent was understood, but the outcome fell short of meeting the objective of course assessment, which is to improve student learning. The changes to the course or pedagogy to support the course were not clear.	Changes were made to the course content or delivery to improve course effectiveness. The process promoted pedagogical dialog within the department, and changes were adopted accordingly.

Measurable: 2

1	2	3
The data collected did not inform teaching and learning.	The assessment produced some measurable information, but created more questions than answers.	Results were straightforward and easy to interpret. The course of action to improve the course or its delivery was clear from the data that was collected.

Manageable: 2 we had too many PSLOs, but we will have fewer, but better, PSLOs in the future. Also, the current CSLOs were not currently aligned with our PSLOs.

1	2	3
Assessment was not manageable.	The assessment process was somewhat manageable, but posed challenges to implement across the program.	The assessment was easily scaled across the department so that full- and part-time faculty could participate with meaningful outcomes.

7.1.4. What changes in the assessment process itself would result in more meaningful data to improve student learning?  
No changes.

7.1.5. Share an outcome where assessment had a positive impact on student learning and program effectiveness. As a result of the assessment, additional practice labs were implemented in order to facilitate and support student learning.

## 7.2. Program Level Assessment

7.2.1. In 2016-2017, units engaged in program level assessment. **Please submit all Program Level Assessment Reports using the link provided.** Describe one important thing you learned from your program level assessment.  
We have far too many PSLOs. We will be reducing them from 8 to 5.

7.2.2. What was the biggest challenge in conducting program level assessment?  
We had too many PSLOs, including some that were not as important as the others and some that were really just special cases of the other PSLOs. Wording assessment problems in a manner that the students would understand was sometimes a problem, but that should improve as we gain more experience in assessing the program.

7.2.3. What resource needs, if any, were identified in your program level assessment? New lab equipment is needed in order to keep up with the existing engineering technology (Instron Tensile Tester, laser cutter, r# printer capable of supporting bigger assembly files )as well as updating the existing one (mechanical test specimen, PLA filament, additional microscopes, additional and newer laptops). All engineering classes utilize specific engineering software. Therefore, it is really challenging for students to learn and practice at their own pace when we have full classes (30+), but only 23 school laptops available to them. Often, those laptops have to be shared with concurrent Physics classes as well. This has been apparent even before any program level assessments.

Also, Engin 25 utilizes SolidWorks CAD software (this is consistent with many 4 years universities and local industry, and national labs). However, the software is not currently supported by our existing school laptops (software is really slow and often freezes). Lastly, SolidWorks is not backward compatible. Therefore, the latest version of the software has to be installed by IT on each laptop before the beginning of every spring semester. Unfortunately, this has never been the case. The software gets usually updated much later throughout the semester, leading to compatibility issues and wasted time for students working on labs and assignments.

## 8. Course Success/Retention Analysis

**Please review the data provided on course retention and success, which has been disaggregated by as many elements as district can provide in their SQL Report**

One of our college goals as stated in our Integrated Plan is to “Increase successful course completion, and term to term persistence.” Our Equity Plan identifies African- American and low income students as disproportionately impacted in terms of successful course completion. (Foster youth are also disproportionately impacted on this indicator, but numbers are too small to disaggregate by discipline/program) Please indicate how well students in these groups are succeeding in your discipline.

	African-American	Low Income Students	All students in program/discipline
<b>Completion Rate (program/discipline)</b>	71.4%	91.1%	93.2%
<b>Success Rate (program/discipline)</b>	71.4%	82.2%	86.5%

8.1. In looking at disaggregated data on success/retention, is there anything else that stands out?

These numbers do not vary significantly from year to year and from semester to semester for African-American students. On the other hand, Foster youth success rate varies significantly.

8.2. What are some strategies that might help students, particularly African-American, foster youth, and low income students successfully complete courses in your discipline? What resources would be needed to implement these strategies? We believe the first step is to promote MESA and any other organization on campus focused on creating a sense of community for those students. Also, we believe that target academic support throughout Math classes would drastically improve those student success rate.

## 9. Goals

### 9.1. Review your program’s goals as listed in response to the final question of your 2012-2013 Comprehensive Program Review posted in the Data Repository of the PRST.

<p>Highlight some of the key goals that were achieved over the past 5 years. What were the key elements that led to success?</p>	<p>One objective was, “Purchase new equipment and provide training to instructors to improve students’ laboratory experience.” The STEM grant helped with this. However, we continue to have a need for the resources to purchase, maintain and repair lab equipment.</p>
<p>Were there any goals that did not go according to plan? What were the key elements that impeded the progress on these goals?</p>	<p>We need to acquire new lab equipment and update existing one. Funds were limited.</p>

### 9.2. Consider the College’s Strategic Directions along with our Integrated Planning Goals listed here:

College Strategic Directions 2014-2019	Integrated Planning Goals
<ol style="list-style-type: none"> <li>1. Increase equitable student engagement, learning, and success.</li> <li>2. Strengthen community engagement and partnerships.</li> <li>3. Promote innovation, expand organizational capacity, and enhance institutional effectiveness.</li> <li>4. Invest in technology, fortify infrastructure, and enhance fiscal resources.</li> </ol>	<ol style="list-style-type: none"> <li>1. ACCESS: increase access through enrollment of students currently underserved in our community.</li> <li>2. IDENTIFYING PATHWAYS: Increase the number of students that define a goal and pathway by the end of their first year.</li> <li>3. COLLEGE-LEVEL TRANSITION: Increase the number of students successfully transitioning into college level math and English courses.</li> <li>4. PERSISTENCE &amp; COMPLETION: Increase successful course completions, and term to term persistence.</li> <li>5. EQUITABLE SUCCESS: Improve the number of LMC students who earn associates degrees, certificates of achievement, transfer, or obtain career employment.</li> <li>6. LEARNING CULTURE: Enhance staff, faculty and administration’s understanding and use of culturally inclusive practices/pedagogy, demonstrating empathy and compassion when working with students.</li> </ol>

**List 3 – 5 longer term (5 year) new goals for your program. For each goal, pick 1 – 2 College Strategic Directions and/or 1 – 2 Integrated Planning Goals to which your new goal aligns.**

Goals	Aligned College Strategic Direction(s)	Aligned Integrated Planning Goal(s)
Goal 1: Invest in new technology, replace old equipment and repair broken one.	2 & 4	4 & 5
Goal 2: Increase the number of school laptops to accommodate class size and invest in new ones, which can support currently implemented engineering software.	1 & 4	1 & 4
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.	2 & 3	4 & 5

**OPTIONAL**

9.3 Resource needs to meet five-year goals

<b><u>Faculty/Staff Resource Request</u></b>			
Department/Unit Goal - Reference #		Strategic Objective - Reference #	
Department/Unit Name		Position Name/Classification	FTE
Position Type	Funding Duration	Funding Source	Est. Salary & Benefits
<input type="checkbox"/> Faculty R/T <input type="checkbox"/> Classified <input type="checkbox"/> Manager <input type="checkbox"/> Student	<input type="checkbox"/> On-going/Permanent <input type="checkbox"/> One-time	<input type="checkbox"/> Operations (Fund 11) <input type="checkbox"/> Other <input type="text"/>	
<b>Justification:</b>			



--

<b>Operating Resource Request</b>	
Department/Unit Goal - Reference #	Strategic Objective - Reference #
Goal #1 and Goal #2	1, 2 and 4
Department/Unit Name	Resource Type
Physical Science/Engineering	<input checked="" type="checkbox"/> Equipment <input type="checkbox"/> IT Hardware/Software <input checked="" type="checkbox"/> Supplies <input type="checkbox"/> Facility Improvement <input type="checkbox"/> Service/Contract <input type="checkbox"/> Other
General Description	Est. Expense
Goal 1: Invest in new technology, replace old equipment and repair broken one. Goal 2: Increase the number of school laptops to accommodate class size and invest in new ones, which can support currently implemented engineering software.	\$15,000
Justification:	
Not have enough equipment and laptops to accommodate current class sizes. Laptops are obsolete and do not support needed engineering software. Our goal is to make our engineering students knowledgeable and competitive about new engineering technology currently implemented by local industry/national labs and many four-year institutions. This would facilitate and support a clear pipeline to transfer, from student to their successful transfer to four-year colleges and universities and/or to local national labs and industries.	

<b>Professional Development Resource Request</b>	
Department/Unit Goal - Reference #	Strategic Objective - Reference #
Department/Unit Name	Resource Type
	<input type="checkbox"/> Conference/Meeting <input type="checkbox"/> Materials/Supplies <input type="checkbox"/> Online Learning <input type="checkbox"/> IT Hardware/Software <input type="checkbox"/> Other
General Description	Est. Expense

<b>Justification:</b>	