pLMC Comprehensive Program Review

Instructional Units

2017-2018

Program/Discipline Electrical/Instrumentation Technology(ETEC)

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) No

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?
Add a TCLT certificate

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:

Electrical Technology				
Semester	Semester 1	Semester 2	Semester 3	Semester 4
List Courses Needed for Degree or Certificate in each semester.	ETEC 10,ETEC 12,ETEC 9	ETEC 20, ETEC 22, ETEC 24, Physics 15	ETEC 30, ETEC 32, ETEC 34	ETEC 40, ETEC 42, ETEC 44, ETEC 46

Instrumentation Technology				
Semester	Semester 1	Semester 2	Semester 3	Semester 4
List Courses Needed for Degree or Certificate in each semester.	ETEC 10,ETEC 12,ETEC 9	ETEC 20, ETEC 22, ETEC 24, Physics 15	ETEC 30, ETEC 32, ETEC 34, Chem 6	ETEC 50, ETEC 52, ETEC 56, ETEC 58, ETEC 59
TCLT				
Semester	Semester 1	Semester 2	Semester 3	Semester 4
List Courses Needed for Degree or Certificate in each semester.	ETEC 10,ETEC 12	ETEC 20, ETEC 22, ETEC 24,	ETEC 40, ETEC 42, ETEC 44, ETEC 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
ETEC 9	**1**	**2**	**1**	**0**
ETEC 10	**1**	**2**	**1**	**0**
ETEC 12	**1**	**2**	**1**	**0**
ETEC 20	**1**	**2**	**1**	**0**
ETEC 24	**1**	**2**	**1**	**0**
ETEC 24	**1**	**2**	**1**	**0**
ETEC 30	**0**	**0**	**1**	**1**
ETEC 32	**0**	**0**	**1**	**1**
ETEC 34	**0**	**0**	**1**	**1**
ETEC 40	**1**	**0**	**0**	**1**
ETEC 42	**1**	**0**	**0**	**1**
ETEC 44	**1**	**0**	**0**	**1**
ETEC46	**1**	**0**	**0**	**1**
ETEC 50	**1**	**0**	**0**	**1**
ETEC 52	**1**	**0**	**0**	**1**
ETEC 56	**1**	**0**	**0**	**1**
ETEC 58	**1**	**0**	**0**	**1**
ETEC 59	**1**	**0**	**0**	**1**

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
ETEC 9	Pat Martucci
ETEC 10	Russell Pederson
ETEC 12	Cecil Nasworthy

ETEC 20	Russell Pederson
ETEC 24	Cecil Nasworthy
ETEC 24	Russell Pederson
ETEC 30	Cecil Nasworthy
ETEC 32	Cecil Nasworthy
ETEC 34	Russell Pederson
ETEC 40	Cecil Nasworthy
ETEC 42	Russell Pederson
ETEC 44	Cecil Nasworthy
ETEC46	Cecil Nasworthy
ETEC 50	Russell Pederson
ETEC 52	Cecil Nasworthy
ETEC 56	Russell Pederson
ETEC 58	Cecil Nasworthy
ETEC 59	Russell Pederson

4.2. Course Offerings/Content

How have your courses changed over the past 5 years (new courses, significant changes to existing courses)?	ETEC 9 is a contextualized Electrical math program that has replaced Math 29 for the required math for the ETEC Certificate or Associate degree. The PLC course has been upgraded to use the Allen Bradley CompacLogic PLCs and the RS Logic 5000 software to write and troubleshoot automated systems. A TCLT program has been added which creates a stackable certificate with a subset of the main Electrical Certificate. The TCLT certificate will qualify students to obtain jobs in the transportation industry such as BART.
How have these changes enhanced your program?	Math principles are covered using real electrical problems which enhances both the Math and Electrical problem solving skills. Using up to date PLCs and software improves the student's chances of passing entrance exams on automated equipment. The Students can use the TLCT certificate as an off ramp to obtain jobs in the transportation industry

	The courses taken for this certificate are stackable and can be applied to either the Electrical or Instrumentation Certificate or Associate degree. New instruments and other equipment has been added to bring program content up to industry new advances.

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.

The ETEC program has an active advisory board made up of representatives of the major industries in our area. They are very effective in promoting the program. They provide Internships, field trips, equipment donations and guest speakers. They hire many of our graduates and pass the word to other industries that we have graduates that could be potential employees for them.

Listed below are documents from advisory meetings in 2016. I did not have an advisory board meeting in 2017 because of my sickness, but I plan to have one this semester.

Dow Chemical Company	GPRusso@dow.com	Russo	George	(925) 432-5069
Dow Chemical Company	mburmann@dow.com	Burmann	Fred	(925) 432-5596
Anheiser-Busch People Departm	Alejandro.Hernandez@anheuser-busch.com	Hernande	Alejandro	
Anheiser-Busch People Departm	matthew.wagner@anheuser-busch.com	Wagner	Matthew	
Brinderson	Mjones094@brinderson.com	Jones	Marlowe	
C&H Sugar	Randall.Purvis@asr-group.com	Purvis	Randall	(510) 787-4254
Delta Diablo Sanitation District	steved@ddsd.org	Domingue	Steven	
Delta Diablo Sanitation District	angelal@deltadiablo.org	Lowrey	Angela	(925) 756-7945
Dow Chemical Company	GPRusso@dow.com	Russo	George	(925) 432-5069
Dow Chemical Company	JWFiori@dow.com	Fiori	Jason	
EBMUD	tlam@ebmud.com	Lamb	Ted	(510) 714-6421
Greysam Industrial Services	mark.foxworth@greysam.com	Foxworth	Mark	(360) 471-3778
Greysam Industrial Services	marybeth.foxworth@greysam.com	Foxworth	MaryBeth	(360) 769-7010
Kone Cranes	mike.magnotta@konecranes.com	Magnotta	Mike	(937)215-4968
Phillips 66	Jorge.Babot@p66.com	Babot	Jorge	(510) 245-4409
Phillips 66	terri.finklestein@p66.com	Finklestei	Terri	(510) 245-4624
SFPUC/SFWATER	sardrey@sfwater.org	Ardrey	Steve	(415)920-4875
Shell Oil	robert.peters@shell.com	Peters	Robert	(925) 313-3001
Shell Oil	robert.muller@shell.com	Robert	Muller	
shell Oil	nickplurkowski@gmail.com	Plurkowsk	Nick	(925) 451-5564
Shell Oil	bill.mahoney@shell.com	Mahoney	Bill	(925) 313-3650
Tesoro	Jon.n.Kruger@tsocorp.com	Kruger	Jon	(925) 822-4744
Tesoro	eric.m.britz@tsocorp.com	Britz	Eric	(925) 370-3217
USS Posco	pmartucci@ussposco.com	Martucci	Pat	(925) 439-6436
USS Posco	jcox@ussposco.com	Cox	Jason	(800) 877-7672
USS Posco	jrowney@ussposco.com	Rowney	Joann	(925) 439-6509
USS Posco	msmith@ussposco.com	Smith	Marianne	

ELECTRICAL TECHNOLOGY ADVISORY COMMITTEE AGENDA

December 6th, 2016

Library Room 105, 3:00-5:00 P.M.

Welcome/Introductions

Program Details and Discussion:

i. Degree Completion and Program Enrollment Numbers

ii. Industry Trends/Labor Market Info

iii. Curricular Updates and Feedback
   a. ETEC 9 – New Course

iv. Resources/Equipment Required and/or Acquired

v. Pathways Collaborations

vi. Future Planning
   a. Industrial Job Fair Date Feedback

vii. Open Discussion/Committee Ideas

viii. Next steps/Meeting Review

Next Meetings Date:

Notes

ADVISORY COMMITTEE MINUTES

12.6.16

ETEC

Welcome/Introductions

Review Last Meeting's Minutes

Program Details and Discussion

Topic	Desired Outcome	Action Taken	Follow-up/notes
Degree Completion and Program Enrollment Numbers	N/A	N/A	Reviewed
Industry Trends/Labor Market Info	Review retirement prospects		Predicted retirements are now starting to happen
Curricular Updates and Feedback	Approval of ETEC 09, Approval of Transit Electrical Certificate	Discussion and vote	All in Favor of both moving forward
Resources/Equipment Required and/or Acquired	Needing Titration/Chemistry tools for water treatment teaching	SFWater will keep in mind. They recently donated an ultrasonic level control	
Work-Based Learning Opportunities and Updates	Internship timelines established	Agreed that an email soliciting timelines will go out early January	Email to be sent January
Pathways Collaborations			
Future Planning	Job Fair date convenient for employers	Discussion on dates. Earlier is better for some. Will keep industry specific at the request of AC	Chairs and WD Team will meet early Jan to decide the date
Open Discussion/Committee Ideas			

ETEC Advisory Committee Meeting
5/10/2016, Library-106, 3:00pm

Initial	Name	Last	Email	Company
	Rob	Perry	robert.n.perry@tsocorp.com	Tesoro
	Fred	Burmann	mburmann@dow.com	The Dow Chemical Co.
	stephen	scott	stephen.scott@p66.com	Phillips 66
	Jason	Fiori	jwfiori@dow.com	Dow Chemical
	Bill	Mahoney	bill.mahoney@shell.com	Shell Oil Company
	Kevin	Cramer	kgcramer@dow.com	Dow Chemical
	Steve	Harrer	sharrer@dow.com	Dow Chemical Company
RP	Robert	Perry	Robert.N.Perry@tsccorp.com	Tesoro Petroleum
				LMC
				LMC
				LMC
ZA	Zahra	Alavi		
AM	Akilah	Moore		

Los Medanos College
ETEC Advisory Committee Meeting Sign-In Sheet
December, 5, 2016
Library 105, 3:00-5:00 p.m.

Name	Organization	Phone	Email
Cecil NASWORTHY	LMC	925 473 7726	
Steve Ardrey	City of San Francisco	415 608 0276	Sardrey@sfwater.org
Jon Kruger	Tesoro	925-822-4744	Jon.n.Kruger@tsocorp.com
KEVIN PALMER	DOW	925-321-0620	KPALMER@DOW.COM
Cathy Ershen	Rosemount Div/ Emerson	916.849.0591	Cathy.ershen@emerson.com
Jason Fiori	DOW	925-432-5544	JWFiori@Dow.com
FRED BURMANN	LMC	925-570-5339	burmann.fred@att.net
Dave Wahl	LMC	925 473 7415	dwahl@losmedanos.edu
Tara Sanders	LMC	(925)473-7417	Tsanders@losmedanos.edu
BILL MAHONEY	SHELL	925-313-3650	BILL.MAHONEY@SHELL.COM
Akilah Moore	LMC		

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.
All courses were assessed in Cycle 1 however, I have noted that the semester stated in the course assessments for ETEC-40, 42, 46, 50, 52, 56 and 58 was incorrect (i.e. Spring 2012). I will correct the semester information on these assessment documents and re-submit.

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**

a. Delete the course
b. Market/promote the course to gain enrollments
c. Other

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:

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:

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:

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?

I do not have any recommendations to the assessment process changes.

7.1.5. Share an outcome where assessment had a positive impact on student learning and program effectiveness.
ETEC Industry partners (i.e. Shell, USS POSCO, Dow, etc.) give our graduates entrance exams. The majority of our students pass these exams which leads to employment thus informing us that our curriculum has led to overall student learning and success.

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.

PSLO #1

ETEC 44 for the Electrical program and ETEC 59 for the instrumentation program both feature a review section which reviews all material covered during the first 3 semesters of the program. Example test that simulate entrance exams from industry are given to refresh their memories. This includes hands on bench test which prepares the students to pass pre-employment test given by industry.
We learned from conversations with industry partners our students have a high pass rate on these exams which explains why the majority of our students get hired shortly after graduation.

PSLO #2

CSLO #3 of ETEC 20 states the student shall demonstrate the following skill.
Analyze the circuit by measuring voltages, currents and resistances to troubleshoot a non-functional motor control circuit safely using electrical test equipment. PSLO 2,3,4,5 out of 18 students 16 passed with a C or better for a pass rate of 89%.
We learned that around 90% of our students are able to pass this type of testing which includes written as well as hands on test.

PSLO #3

During ETEC 59 fall of 2016 students are required to write technical reports and do oral presentations about the labs that they worked on. Apply knowledge of motor control, PLCs, instrumentation sensors, transmitters and calibration equipment to take pre-employment written and bench test and certification exams dealing with industrial control systems. Out of 29 students 28 passed with a C or better for a pass rate of 97%.

By instructor observations we learned that most of the ETEC students are able to generate a written report with all documentation necessary to explain their part in the project. Oral reports by some of the less qualified students need improvement. More practice is needed.

PSLO #4

CSLO #2 of ETEC 22 states the students shall demonstrate the following skills: Troubleshoot basic semiconductor circuits by using electronic test equipment to make and analyze circuit measurements in order to determine cause for device failure and present finding either orally or in writing. (PSLO#2and #4) Out of 15 students 14 passed with a C or better for a pass rate of 93%

By observing the students using the equipment we learned that some improvement in using and interrupting results of equipment usage is needed.

PSLO #5

CSLO 4 of ETEC 52 states the students shall demonstrate the following skills: Connect an entire Control Loop. PSLO 1,2,3,4,5,&6. All 31 students passed with a C or better for a pass rate of 100%

PSLO #6

PSLO #6 should be eliminated because it is just a combination of all the other 5 PSLOs.

7.2.2. What was the biggest challenge in conducting program level assessment?

A challenge has been to find time and full-time faculty as previous to fall 2016 my department had only one full-time faculty member.

7.2.3. What resource needs, if any, were identified in your program level assessment?
We need a lot more space for the hands-on ETEC labs, as we are unable to add more equipment and expand sections for an already "at-capacity" program.

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 disproportionally 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
Completion Rate (program/discipline)	*97.9% (FA16)* *94.2% (SP17)*	*93.9% (FA16)* *96.7% (SP17)*	*95.4% (FA16)* *96.6% (SP17)*
Success Rate (program/discipline)	*89.6% (FA16)* *73.1% (SP17)*	*84.9% (FA16)* *78.3% (SP17)*	*86.2% (FA16)* *81.8% (SP17)*

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

We have low enrollment and low success rates for African-American students and Low Income Students. Previously we have had low enrollment for female students however, over the last few semesters our success rate for female students has increased slightly.

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?

Implementation of a prerequisite requirement for English and Math assessment with a minimum of ENGL-090 and MATH-025 or ETEC-009, prior to enrollment in the program would better inform the student of their level of learning required to successfully complete the program. We first would need to know if it is possible to make this a prerequisite requirement for the ETEC Program. We would need to collaborate with the Assessment Center, Curriculum Committee, Office of Instruction and Admissions & Records. Currently, students are scheduled during the first semester of the program to take MATH-029 or ETEC-009 however, during the first semester our students are already working with and requiring a calculations at a MATH-029 level. As this is currently not a prerequisite requirement, we find we lose a significant number of students during the first semester due to this hurdle in learning. By implementing this English and Math assessment prerequisite this would help ensure the students know and can properly perform the calculations required during the first semester thus leading to student success and retention.

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.

Highlight some of the key goals that were achieved over the past 5 years. What were the key elements that led to success?	An existing second level classroom was modernized to become the ETEC Basic Lab. Due to donations from industry partners and grant funding we have been able to add newer equipment to our labs. ETEC-009 was developed as a contextualized Math course. We have increased the number of industry partners such as C&H Sugar, Anhauser-Busch, EBMUD and S.F. Water District to name a few. These new

	partnerships have led to an increase in internships, employment opportunities and increased donations to the program.
Were there any goals that did not go according to plan? What were the key elements that impeded the progress on these goals?	While we did receive a classroom/lab for ETEC Basic Lab, we still require additional space for the Advanced courses. We have not yet been able to establish prerequisite requirements for English and Math for the ETEC Program. The biggest challenge with achieving this goal would be justifying the need for this requirement and how it impedes student success. We redesigned our marketing strategies to feature more female and African-American ETEC students and/or graduates in our flyers, brochures, advertisements, presentations, etc. this has not led to an increase in enrollment in these populations.

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

College Strategic Directions 2014-2019	Integrated Planning Goals
1. Increase equitable student engagement, learning, and success. **2. Strengthen community engagement and partnerships.** **3. Promote innovation, expand organizational capacity, and enhance institutional effectiveness.** **4. Invest in technology, fortify infrastructure, and enhance fiscal resources.**	**1. ACCESS: increase access through enrollment of students currently underserved in our community.** **2. IDENTIFYING PATHWAYS: Increase the number of students that define a goal and pathway by the end of their first year.** **3. COLLEGE-LEVEL TRANSITION: Increase the number of students successfully transitioning into college level math and English courses.** **4. PERSISTENCE & COMPLETION: Increase successful course completions, and term to term persistence.** **5. EQUITABLE SUCCESS: Improve the number of LMC students who earn associates degrees, certificates of achievement, transfer, or obtain career employment.** **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.

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: Decrease congestion in the laboratory by expanding the laboratory facility.	3 and 4	4
Goal 2: Increase public awareness of this program, concentrating on the African American and female population.	2	5
Goal 3: Additional staffed laboratory hours to assist high risk student during non-instructional time.	1 and 2	4 and 5
Goal 4:		
Goal 5:		

OPTIONAL

9.3 Resource needs to meet five-year goals

Faculty/Staff Resource Request			
Department/Unit Goal - Reference #		Strategic Objective - Reference #	
Department/Unit Name		Position Name/Classification	FTE
ETEC DEPARTMENT			
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:			

The laboratory is open morning and evenings with staff personal. The students continual request access to the laboratory when to being used or staffed during the afternoon and prior to evening classes.
The current student tutor program helps the classroom learning experience along with giving underprivileged students a source of income, work experience, and confidence. Increasing this program will enhance the persistence and completion rate.

Operating Resource Request

Department/Unit Goal - Reference #	Strategic Objective - Reference #
Department/Unit Name	**Resource Type**
	☑ Equipment ☐ IT Hardware/Software ☑ Supplies ☑ Facility Improvement ☐ Service/Contract ☐ Other
General Description	**Est. Expense**
Justification:	

Professional Development Resource Request

Department/Unit Goal - Reference #	Strategic Objective - Reference #
Department/Unit Name	**Resource Type**
	☐ Conference/Meeting ☐ Materials/Supplies ☐ Online Learning ☐ IT Hardware/Software ☐ Other
General Description	**Est. Expense**

Justification:	