



## 2016-2017 Instructional Program Review Annual Update

### CHEMISTRY

1. Discipline/Area Name: <b>CHEMISTRY:MSE</b>	For: <b>2016-2017</b>
2. Name of person leading this review: <b>Jessica Harper, Alex Schroer, Jeff Cooper, Carlos Hernandez, David Newman, Christos Valiotis (Chair)</b>	
3. Names of all participants in this review: <b>Jessica Harper, Alex Schroer, Jeff Cooper, Carlos Hernandez, David Newman, Christos Valiotis (Chair)</b>	
4. Status Quo option: Year 1: Comprehensive review <input type="checkbox"/> Year 2: Annual update or status quo option <input type="checkbox"/> Year 3: Annual update <input checked="" type="checkbox"/> Year 4: Annual update or status quo option <input type="checkbox"/>	In years two and four of the review cycle, programs may determine that the program review conducted in the previous year will guide program and district planning for another year. <input type="checkbox"/> Check here to indicate that the program review report written last year accurately reflects program planning for the current academic year. (Only programs with no updates or changes may exercise the status quo option. All others will respond to questions 6 – 13.)

Number of Full-time Faculty

5

Number of Part-time Faculty

11

### Data/Outcome Analysis and Use

5. Please review the subject level data and comment on trends (data is available on the [Program Review](#) web page):

Indicator	2012-2013	2013-2014	2014-2015	2015-2016	Recent trends?	Comment
Enrollment #	1144	1292	1408	1482	Increase	
# of Sections offered	50	56	60	63	Increase	
# of Online Sections offered	0	0	0	0	No Change	
# of Face-to-Face Sections offered	50	56	60	63	Increase	
# of Sections offered in Lancaster	48	54	58	61	Increase	
# of Sections in other locations	2	2	2	2	No Change	

<u># of Certificates awarded</u>	N/A	N/A	N/A	N/A	No Change	
<u># of Degrees awarded</u> <b>AS-T in Physical Science</b> <b>AS-T in Chemistry</b>	14	40	15	41	Increase	The Chemistry AS-T is awaiting approval. It was not available during this reporting period. However, Chemistry contributed significantly towards the general Physical Science degree. It is possible that the number of AS degrees in Physical Sciences will decrease when the AS-T in Chemistry comes on line.
Subject Success Rates	72.1	69.4	65.9	67.1	No Change	Success rates fluctuated. There has been a 6% reduction from 2013 to 2015, but a 1.2% increase in 2016. We will continue to monitor the trend in the coming years.
Subject Retention Rates	84.5	86.1	83.9	85.6	No Change	
Full-time Load (Full-Time FTEF)	5.90	5.94	6.26	6.30	Increase	
Part-time Load (Part-time FTEF)	3.93	4.07	4.33	4.70	Increase	
PT/FT FTEF Ratio	.67	.69	.69	.75	Increase	The PT/FT ratio has shown a slight increase indicating that the department is relying more and more on adjuncts.

#	Indicator	Comments and Trend Analysis
7.	If applicable, report program/area data showing the quantity of services	N/A

	provided over the past four years (e.g. # of workshops or events offered, ed.plans developed, students served)																																																																																									
8.	Student success and retention rates by equity groups within discipline	<p>Review and interpret the subject data by race/ethnicity and gender. Identify achievement gaps. List actions that are planned to meet the Institutional Standard of <b>69.1%</b> for student success and to close achievement gaps:</p> <table border="1"> <thead> <tr> <th><b>Race/Ethnicity</b></th> <th><b>20012-13</b></th> <th><b>Achvmnt Gap</b></th> <th><b>2013-14</b></th> <th><b>Achvmnt Gap</b></th> <th><b>2014-15</b></th> <th><b>Achvmnt Gap</b></th> <th><b>2015-16</b></th> <th><b>Achvmnt Gap</b></th> <th><b>All Years</b></th> <th><b>Achvmnt Gap</b></th> </tr> </thead> <tbody> <tr> <td>African-American</td> <td>52.80%</td> <td><b>26.80%</b></td> <td>55.40%</td> <td><b>17%</b></td> <td>56.20%</td> <td><b>16.70%</b></td> <td>52.70%</td> <td><b>19.30%</b></td> <td>54.30%</td> <td><b>20%</b></td> </tr> <tr> <td>Hispanic</td> <td>68.90%</td> <td><b>8.70%</b></td> <td>69.80%</td> <td><b>2.60%</b></td> <td>63.30%</td> <td><b>9.60%</b></td> <td>66.00%</td> <td><b>7.50%</b></td> <td>66.70%</td> <td><b>7.70%</b></td> </tr> <tr> <td>Other</td> <td>81.70%</td> <td></td> <td>73.20%</td> <td></td> <td>71.10%</td> <td></td> <td>72.00%</td> <td></td> <td>74.30%</td> <td></td> </tr> <tr> <td>White</td> <td>79.60%</td> <td></td> <td>72.40%</td> <td></td> <td>72.90%</td> <td></td> <td>73.50%</td> <td></td> <td>74.60%</td> <td></td> </tr> </tbody> </table> <p>(Success by race or ethnicity.)</p> <table border="1"> <thead> <tr> <th><b>Gender</b></th> <th><b>20012-13</b></th> <th><b>Achvmnt Gap</b></th> <th><b>2013-14</b></th> <th><b>Achvmnt Gap</b></th> <th><b>2014-15</b></th> <th><b>Achvmnt Gap</b></th> <th><b>2015-16</b></th> <th><b>Achvmnt Gap</b></th> <th><b>All Years</b></th> <th><b>Achvmnt Gap</b></th> </tr> </thead> <tbody> <tr> <td>Female</td> <td>70.70%</td> <td><b>3.80%</b></td> <td>69.10%</td> <td><b>0.9%</b></td> <td>65.40%</td> <td><b>1.30%</b></td> <td>66.20%</td> <td><b>2.30%</b></td> <td>67.70%</td> <td><b>1.90%</b></td> </tr> <tr> <td>Male</td> <td>74.50%</td> <td></td> <td>70%</td> <td></td> <td>66.70%</td> <td></td> <td>68.50%</td> <td></td> <td>69.60%</td> <td></td> </tr> </tbody> </table> <p>(Success by gender)</p> <p>The achievement gap for African-Americans in chemistry courses mirrors that for the college as a whole. For example, in 2012-2016, the overall course success rate for this population at the college is 55.4%, whereas chemistry is 54.3%. With</p>	<b>Race/Ethnicity</b>	<b>20012-13</b>	<b>Achvmnt Gap</b>	<b>2013-14</b>	<b>Achvmnt Gap</b>	<b>2014-15</b>	<b>Achvmnt Gap</b>	<b>2015-16</b>	<b>Achvmnt Gap</b>	<b>All Years</b>	<b>Achvmnt Gap</b>	African-American	52.80%	<b>26.80%</b>	55.40%	<b>17%</b>	56.20%	<b>16.70%</b>	52.70%	<b>19.30%</b>	54.30%	<b>20%</b>	Hispanic	68.90%	<b>8.70%</b>	69.80%	<b>2.60%</b>	63.30%	<b>9.60%</b>	66.00%	<b>7.50%</b>	66.70%	<b>7.70%</b>	Other	81.70%		73.20%		71.10%		72.00%		74.30%		White	79.60%		72.40%		72.90%		73.50%		74.60%		<b>Gender</b>	<b>20012-13</b>	<b>Achvmnt Gap</b>	<b>2013-14</b>	<b>Achvmnt Gap</b>	<b>2014-15</b>	<b>Achvmnt Gap</b>	<b>2015-16</b>	<b>Achvmnt Gap</b>	<b>All Years</b>	<b>Achvmnt Gap</b>	Female	70.70%	<b>3.80%</b>	69.10%	<b>0.9%</b>	65.40%	<b>1.30%</b>	66.20%	<b>2.30%</b>	67.70%	<b>1.90%</b>	Male	74.50%		70%		66.70%		68.50%		69.60%	
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		programs such as First Year Experience and Umoja to scaffold students towards greater success in college, it is anticipated that this gap in chemistry success will diminish too. Some faculty are implementing AVID strategies in their teaching, which are also expected to improve success of students who could benefit from closer engagement in the classroom.
9.	Career Technical Education (CTE) programs: Review the labor market data on the <a href="#">California Employment Development Department</a> website for jobs related to your discipline.	Comment on the <a href="#">occupational projections</a> for employment in your <a href="#">discipline</a> for the next two years and how the projections affect your planning:  N/A

10. Cite examples of using action plans (for SLOs, PLOs, OOs, ILOs) as the basis for resource requests and how the allocation of those resources or other changes resulted in improved outcomes over the past four years.

SLO/PLO/OO/ILO	Action Plan	Current Status	Impact of Action
<b>CHEM 120 SLO2</b>	<b>Revise SLO 2</b>	<b>Ongoing</b>	<b>It is anticipated that revising this outcome will better reflect student learning.</b>
<b>AS Physical Science: 1 of 4 PLOs Met</b>	<b>Revise PLO assessment methods</b>	<b>Ongoing</b>	<b>This revision would make the outcomes more relevant to students actually in the program.</b>

11. Review the goals identified in your most recent comprehensive self-study report and any subsequent annual reports. Briefly discuss your progress in achieving those goals.

Goals/Objectives	Current Status	Impact of Action (describe any relevant measures/data used to evaluate the impact)
Goal #1: AS-T in Chemistry	Ongoing	Goal #1 is nearly completed. When the degree receives state approval, it can be added to the AVC catalog.
Goal #2: Close Achievement Gaps in Success Rates Among Racial/Ethnic Groups and Goal #3: Improve Student Success and Retention	Ongoing	Goal #2 and #3: Two chemistry faculty participated in the AVID for Higher Education summer institute and are incorporating some of the high-engagement strategies that were recommended. College efforts to provide more structural support for students are taking root—such as FYE, Umoja, STEM summer bridge, Net Tutor...
Goal #4: Bring program into full alignment with standard professional practices	Ongoing	We have made much progress in Goal #4. Many of the needed physical resources have been acquired. Revisions in curriculum to incorporate the instrumentation are in progress. We offer honors options, but have not yet moved into sustained research projects.

Briefly discuss your progress in achieving those goals:

Please describe how resources provided in support of previous program review contributed to program improvements:  
Due to the investments in instrumentation needed for Goal #4, the chemistry program now meets the standards promoted by the American Chemical Society for two-year colleges. However, we need a lab technician, consumables (such as helium gas), and, at some point, new computers to sustain them.

12. Based on data analysis, outcomes, program indicators, assessment and summaries, list discipline/area goals and objectives to advancing district Strategic Goals, improving outcome findings and/or increasing the completion rate of courses, certificates, degrees and transfer requirements in 2018-2019. Discipline/area goals must be guided by **district Strategic Goals** in the Educational Master Plan (EMP), p.90. They **must be supported by an outcome or other reason (e.g., health and safety, data analysis, national or professional standards, a requirement or guideline from legislation or an outside agency).**

Goal #	Discipline/area goal and objectives	Relationship to Strategic	Action plan(s) or steps needed to achieve the goal**	Resources
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		Goals* in Educational Master Plan (EMP) and/or Outcomes		needed (Y/N)?
1	Expand offerings at Palmdale campus and move sections to more desirable times.	*2. Increase efficient and effective use of all resources: Technology, Facilities, Human Resources, Business Services *4. Advance more students to college-level coursework.	When Palmdale campus opens, we will have the freedom to schedule chemistry labs at times that are more convenient for students. Currently, lab can only be offered on Friday evening, due to availability of The Palmdale Aerospace Academy which allows us to use their facilities. Many students work or care for family at that time. To be equitable for the students and faculty in Palmdale, these labs need a technician to support them.	Yes
2	Review prerequisite for CHEM 110	1. Commitment to strengthen Institutional Effectiveness measures and - Supporting PLO(s), SLO(s), OO(s), ILO(s)	Increase success rate; this chem course has the lowest chem success rate Study correlation of math level with success in CHEM 110	Yes
3	Develop chemistry laboratory technician certificate	- Supporting PLO(s), SLO(s), OO(s), ILO(s) 5.Align instructional programs to the skills identified by the labor market	Draft program requirements, organize advisory board, establish certificate program	Yes
4	Revise curriculum to incorporate more instrumentation in CHEM 120/210/220	*3. Focus on utilizing proven instructional strategies that will foster transferable intellectual skills *2. Increase efficient and effective use of all resources: Technology, Facilities, Human Resources, Business Services - Supporting PLO(s), SLO(s), OO(s), ILO(s)	Write some new lab experiments for these courses. Training for faculty. Expand honors and research projects. Update lab computers. Purchase computational chemistry program that has enough capability to model the instrumentation.	Yes
5	Promote student success by increasing course offerings	- Supporting PLO(s), SLO(s), OO(s), ILO(s) *2. Increase efficient and effective use of all resources:	Resources needed to accommodate the increased number of students, so that the same lab could be offered simultaneously in two different locations.	Yes

		Technology, Facilities, Human Resources, Business Services	Support for the lab tech needs to be provided (a part time night lab in Lancaster) and additional lab supplies are needed.	
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**\*\*Action plan verbs: *expand, reduce, maintain, eliminate, outsource, reorganize, re-engineer, study further, etc.***

13. Identify significant resource needs that should be addressed currently or in near term. For each request type identify which **discipline/program goal(s) from #12 guide this need.**

Indicate which Goal(s) guide this need	Type of Request (Personnel <sup>1</sup> , Technology <sup>2</sup> , Physical <sup>3</sup> , Professional development <sup>4</sup> , Other <sup>5</sup> )	New or Repeat Request?	Briefly describe your request here	Amount, \$	One-time or Recurring Cost, \$?	Contact's name
#1	Personnel	Repeat	Lab technician for Palmdale		Recurring	
#2	Other	New	Institutional Research analysis		One-time	
#3, #4, #5	Personnel	Repeat	Lab technician with instrumentation experience		Recurring	
#4	Technology	Repeat	Computational Modeling Program	\$1,600	One-time	
#4, #5	Technology	Repeat	Replace lab laptops		One-time	
#5	Other	New	Purchase supplies needed to support simultaneous offering of lab sections		One-time	