2016-2017 Instructional Program Review Annual Update

GEOSCIENCES

1. Discipline/Area Name: **GEOSCIENCES:MSE**	For: **2016-2017**
2. Name of person leading this review: **Mike Pesses, Aurora Burd, Christos Valiotis**	
3. Names of all participants in this review: **Mike Pesses, Aurora Burd, Christos Valiotis**	
4. Status Quo option: Year 1: Comprehensive review ☐ Year 2: Annual update or status quo option ☐ Year 3: Annual update ☒ Year 4: Annual update or status quo option ☐	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. ☐ 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 2 **Number of Part-time Faculty** 4

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 #	1937	1863	1697	1515	Decrease	The decreases in enrollment numbers, sections, etc. all reflect a decision by full time faculty to not teach as many overload classes. When adjunct faculty are not found to teach the classes, the sections have been removed from the schedule and have not been replaced in following semesters.

# of Sections offered	59	58	52	46	Decrease	
# of Online Sections offered	1	0	0	0	Decrease	Geography 102OL and 102LOL are being offered in Fall 2017 to increase our online offerings.
# of Face-to-Face Sections offered	58	58	52	46	Decrease	
# of Sections offered in Lancaster	47	46	41	36	Decrease	
# of Sections in other locations	11	12	11	8	Decrease	
# of Certificates awarded	4	6	4	2	Decrease	
# of Degrees awarded	N/A	N/A	0	1	Increase	
Subject Success Rates	69	68	72	62	Decrease	The average success rate for the reporting period was 68% and it showed a sharp and while it was fairly constant from 2013 to 2015 it showed a sharp decrease in 2016. We will have to monitor the success rate in the coming years to determine if the downward trend persists. It should be noted that we have seen the retirement of two full time faculty and the hiring of one new full time position during this period.
Subject Retention Rates	91	88	89	83	Decrease	
Full-time Load (Full-Time FTEF)	3.25	2.54	2.63	2.63	No Change	
Part-time Load (Part-time FTEF)	2.29	2.64	1.93	1.62	Decrease	
PT/FT FTEF Ratio	0.7	1.04	0.73	0.62	Decrease	On average, during the reporting period, adjunct faculty taught about 40% of the offered sections.

#	Indicator	Comments and Trend Analysis

<table>
<tr><td>7.</td><td>If applicable, report program/area data showing the quantity of services provided over the past four years (e.g. # of workshops or events offered, ed.plans developed, students served)</td><td>N/A</td></tr>
<tr><td>8.</td><td>Student success and retention rates by equity groups within discipline</td><td>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 69.1% for student success and to close achievement gaps:
<table>
<tr><th colspan="11">Earth Science</th></tr>
<tr><th>Race/Ethni</th><th>20012-13</th><th>Achvmnt Gap</th><th>2013-14</th><th>Achvmnt Gap</th><th>2014-15</th><th>Achvmnt Gap</th><th>2015-16</th><th>Achvmnt Gap</th><th>All Years</th><th>Achvmnt Gap</th></tr>
<tr><td>Afr-Am</td><td>…..</td><td>….</td><td>50%</td><td>44%</td><td>….</td><td>….</td><td>60%</td><td>10%</td><td>61%</td><td>21%</td></tr>
<tr><td>Hispanic</td><td>75%</td><td>6%</td><td>72%</td><td>22%</td><td>86%</td><td>-3%</td><td>71%</td><td>-1%</td><td>77%</td><td>5%</td></tr>
<tr><td>Other</td><td>…..</td><td></td><td>….</td><td></td><td>….</td><td></td><td>….</td><td></td><td>….</td><td></td></tr>
<tr><td>White</td><td>81%</td><td></td><td>94%</td><td></td><td>83%</td><td></td><td>70%</td><td></td><td>82%</td><td></td></tr>
<tr><td colspan="11">(Success by race or ethnicity.)</td></tr>
<tr><th>Gender</th><th>20012-13</th><th>Achvmnt Gap</th><th>2013-14</th><th>Achvmnt Gap</th><th>2014-15</th><th>Achvmnt Gap</th><th>2015-16</th><th>Achvmnt Gap</th><th>All Years</th><th>Achvmnt Gap</th></tr>
<tr><td>Female</td><td>84%</td><td>-20%</td><td>90%</td><td>-35%</td><td>83%</td><td>2%</td><td>75%</td><td>-25%</td><td>82%</td><td>-20%</td></tr>
<tr><td>Male</td><td>64%</td><td></td><td>55%</td><td></td><td>85%</td><td></td><td>50%</td><td></td><td>62%</td><td></td></tr>
<tr><td colspan="11">(Success by gender)</td></tr>
</table></td></tr>
</table>

Geography/GIS

Race/Ethni	20012-13	Achvmnt Gap	2013-14	Achvmnt Gap	2014-15	Achvmnt Gap	2015-16	Achvmnt Gap	All Years	Achvmnt Gap
Afr-Am	48%	**29%**	43%	**31%**	62%	**23%**	44%	**30%**	49%	**29%**
Hispanic	67%	**10%**	75%	**-1%**	76%	**9%**	61%	**13%**	70%	**8%**
Other	68%		64%		73%		73%		69%	
White	77%		74%		85%		74%		78%	

(Success by race or ethnicity.)

Gender	20012-13	Achvmnt Gap	2013-14	Achvmnt Gap	2014-15	Achvmnt Gap	2015-16	Achvmnt Gap	All Years	Achvmnt Gap
Female	69%	**-7%**	67%	**-1%**	77%	**-2%**	64%	**-5%**	70%	**-4%**
Male	62%		66%		75%		59%		66%	

(Success by gender)

Geology

Race/Ethni	20012-13	Achvmnt Gap	2013-14	Achvmnt Gap	2014-15	Achvmnt Gap	2015-16	Achvmnt Gap	All Years	Achvmnt Gap
Afr-Am	58%	**29%**	53%	**26%**	39%	**33%**	38%	**35%**	48%	**30%**
Hispanic	73%	**14%**	71%	**8%**	67%	**5%**	67%	**6%**	70%	**8%**
Other	74%		85%		76%		70%		76%	
White	87%		79%		72%		73%		78%	

(Success by race or ethnicity.)

Gender	20012-13	Achvmnt Gap	2013-14	Achvmnt Gap	2014-15	Achvmnt Gap	2015-16	Achvmnt Gap	All Years	Achvmnt Gap
Female	78%	**-9%**	70%	**2%**	64%	**0%**	65%	**-3%**	70%	**-2%**
Male	69%		72%		64%		62%		68%	

(Success by gender)

		The success rates for Earth Science fluctuate widely over the years showing an overall large gap between AA and whites. During the same period, female students appear to be performing much higher than males. However, the number of students served per year (approximately 50) is too small to make statistically valid determinations. For the Geography/GIS and Geology areas, the success rates have remained relatively constant despite some fluctuations between the years. The data show that there is a significant gap in achievement between AA and white students with whites performing 30% better. The gap between Hispanics and whites is much lower at 8%. In both areas however, female and male students perform at a similar level. Overall whites and Hispanics perform at or above the institutional goal of 69.1% while AA students are almost 20% lower. New math prerequisites are being introduced for Geography 101, Geology 101 and 102, and Earth Science 101 in Fall 2017. The hope is that this will ensure that students are better prepared for analytical reasoning and the application of theory to real world problems. This is not targeted to a specific racial group, but will hopefully result in an increase in success rates for all Geosciences students.
9.	Career Technical Education (CTE) programs: Review the labor market data on the California Employment Development Department website for jobs related to your discipline.	Comment on the occupational projections for employment in your discipline for the next two years and how the projections affect your planning: Cartographers and Photogrammetrists (who receive Geography/GIS degrees) had a median salary of $61,880 per year and 29% (Much faster than average) job outlook according to the US Bureau of Labor Statistics. The California Employment Development Department projects a 44.4% increase in cartography jobs by 2024. Geoscientists had a median salary of $89,700 per year with a 10% (Faster than average) job outlook according to the US Bureau of Labor Statistics. The California Employment Development Department projects a 22.0% increase in geoscientists jobs by 2024. There is clearly a demand for scientists working in the geosciences which strengthens our commitment to helping AVC students get the training they need to enter the workforce.

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	Impact of Action

		Status	
Earth Science SLO	**Meteorology is the last topic of the four main topics of ERSC 101 (Geology, Astronomy, Oceanography, Meteorology). It has a tendency to get short shrift compared to the other three topics. Cover this topic in more detail during the lecture and lab portions of ERSC 101, and consider redesigning existing labs so that at least one lab is more focused on atmospheric science.** **Additional Resources Requested: DIY spin table, chute, butcher paper, food coloring, and ball bearings for a coriolis effect lab. I have design specs for this lab but need help purchasing components and constructing the lab apparatus. I've taught this lab previously at other community colleges -- it's fun and students seem to learn a lot. ... again, a lab tech would facilitate design/development of add'l labs!**	**Ongoing**	**Funding has not been available yet.**
GEOL 101 SLO	**Methodology is flawed because all students across all sections should be assessed the same way (e.g. all on the final exam, or all on midterms). However, students need to become more proficient at identification of rocks and minerals. Recommendations include: 1. Additional use of hand samples to be passed around during lectures. 2. Additional use of hand samples for inquiry-based student activities during lectures (e.g. small group practice). 3. Encourage more students to enroll in lab (for even more hands-on practice). This should include consultation with AVC Academic Counseling**		**Funding has not been available yet.**

	to help students make appropriate course selections. 4. In mid-spring 2016, trays of minerals, igneous rocks, sedimentary rocks, and metamorphic rocks were placed on reserve at both the main campus library and the Palmdale Center library. As of September 2016, these trays have been checked out over 60 times (by students in GEOL 101, GEOL 101L, GEOL 101-HON and ERSC 101). Hopefully 2016-2017 GEOL 101 students will perform better on this SLO! 5. AVC already has a large collection of rocks and minerals, but many are not appropriate for large lectures, and the classes at the Palmdale Center typically have less access to these specimens (because an instructor has to bring boxes of rocks over from the main campus). AVC Geoscience needs to continue to grow its collection to eventually have a collection which remains in Palmdale. **Additional Resources Requested: 1. Storage space at new Palmdale Center 2. Additional rocks and minerals for large lectures.**		
GEOG 205 SLO	**In the Fall 2016 semester, GIS students participated in what we hope to be an ongoing student project of mapping the landscaping on campus. Working on a real project increased student interest and participation, as well as resulted in our meeting of outcomes. It is our hope that GEOG 205 can continue to run despite low enrollment numbers to ensure that this project as well as interest in the**	**Ongoing**	**We will have to see if continued support of GEOG 205 running despite low enrollment will help build the program.**

	course grows.		

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)
Full Time Geography Instructor	Ongoing	**The fact that we cannot find adjunct faculty to teach sections given up by the one full time faculty member suggests that we have a staffing issue. Further, the fact that many classes that are necessary for degree programs like Geography 102, 102L, 106, 110, 201, 220, 221, 222, 298, and 299 are not being consistently offered shows a lack of commitment to geography students at AVC.**
Full Time Geosciences Lab Technician	Ongoing	**In addition to another instructor, we have continued to ask for dedicated lab support. While chemistry, physics, physical sciences, and biology have lab technicians, geography, GIS, geology, and Earth science are left without. This takes time away from instruction, outcomes assessment, service to the community, etc. in order for faculty to maintain equipment, clean up labs, and manage supplies across multiple sections. Faculty spend hours of unpaid time doing this work.**
Briefly discuss your progress in achieving those goals: A hybrid position has been posted for a Physical Sciences/Geography Instructor but the first job search resulted in no candidates being suitable for the position. No funding has been allocated for a lab tech position.		
Please describe how resources provided in support of previous program review contributed to program improvements:		

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 Goals* in Educational Master	Action plan(s) or steps needed to achieve the goal**	Resources needed (Y/N)?

		Plan (EMP) and/or Outcomes		
1	Hiring of Full Time Geography Instructor to increase number of students completing courses, GIS certificate, and Geography AA-T degree as well as to reverse the trend of eliminating geography course sections.	*3. Focus on utilizing proven instructional strategies that will fostertransferable intellectual skills - Supporting PLO(s), SLO(s), OO(s), ILO(s)	Allocate funding and perform an aggressive recruitment and advertisement of the position	Yes
2	Hiring of Geosciences Lab Technician to increase number of students completing courses, GIS certificate, Geology AS-T degree and Geography AA-T degree.	*2. Increase efficient and effective use of all resources: Technology, Facilities, Human Resources, Business Services - Supporting PLO(s), SLO(s), OO(s), ILO(s)	Allocate funding and perform an aggressive recruitment and advertisement of the position	Yes
3	Focus on Introductory GIS course (GEOG 205) and AVC Facilities project	*2. Increase efficient and effective use of all resources: Technology, Facilities, Human Resources, Business Services *3. Focus on utilizing proven instructional strategies that will fostertransferable intellectual skills 5.Align instructional programs to the skills identified by the labor market - Supporting PLO(s), SLO(s), OO(s), ILO(s)	As we have not been able to offer the classes necessary for the GIS Certificate Program, it would be prudent to mothball the non-introductory courses and certificate and focus on GEOG 205. That class has been able to fill with students (due to its lack of a prerequisite). Further, we have partnered with Facilities in having students work to map landscaping materials around campus. This real application of theory and skill encouraged students and resulted in excellent student outcomes. If we can get the support to run GEOG 205, even with low student enrollment, we can develop a continuous project of mapping the campus which will increase student interest and success as well as save the campus consulting fees necessary to map resources.	Yes
4	Purchase fossil samples for Geology 102L exercises	*3. Focus on utilizing proven instructional strategies that will fostertransferable intellectual skills	The geology lab currently has a large, but random assortment of real fossils, though some are quite fragile and not suitable for being passed around in labs and	Yes

		- Supporting PLO(s), SLO(s), OO(s), ILO(s)	lectures. Since the assortment of fossils is quite random, it would be nice to have some more systematic fossils, e.g. a set of trilobites showing speciation and changes over time (versus a box of about 20 unlabeled, unsorted samples). We would like to purchase some billets of Green River Formation Shale for use during GEOL 102L	

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[1], Technology[2], Physical[3], Professional development[4], Other[5])	New or Repeat Request?	Briefly describe your request here	Amount, $	One-time or Recurring Cost, $?	Contact's name
1	**Personnel**	**Repeat**	**Full time Geography Position**		**Recurring**	
2	**Personnel**	**Repeat**	**Geosciences Lab Tech Position**		**Recurring**	
3	**Technology**	**New**	**Purchase of fossil specimens**		**One-time**	