2017-2018 Instructional Program Review Annual Update

1. Discipline/Area Name: **Biological and Environmental Sciences: Agriculture: Park and Landscape Management**	For: **2019-2020**
2. Name of person leading this review: **Neal Weisenberger**	
3. Names of all participants in this review: Neal Weisenberger, Sharon Weisenberger, Kris Chassion	

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 | 1 |

Number of Part-time Faculty | 1 |

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	2013-2014	2014-2015	2015-2016	2016-2017	Recent trends?	Comment
Enrollment #	187 (68)	246 (73)	201 (73)	195 (61)	Decrease	Small numbers and different classes each year. Even years should be compared to even years and odd years to odd years, due to class offerings and sequencing. Numbers in parenthesis are BIOL 103 and are not included in larger numbers (AGRI only). Slightly lower drop in numbers is due to (1) 2 classes being dropped and Historically vocational programs have decreased enrollment in

						years of low unemployment
# of Sections offered	12(3)	13 (3)	13 (3)	11 (3)	Decrease	Due to 2 classes being dropped
# of Online Sections offered	0	0	0	0	No Change	
# of Face-to-Face Sections offered	12 (3)	13 (3)	13 (3)	11	Decrease	Due to 2 classes being dropped
# of Sections offered in Lancaster	12 (3)	13(3)	13 (3)	11	Decrease	Due to 2 classes being dropped
# of Sections in other locations	0	0	0	0	No Change	
# of Certificates awarded	2	8	7	4	Decrease	Small numbers and different classes each year make it challenging to evaluate.
# of Degrees awarded	0	7	6	7	No Change	
Subject Success Rates	72.2 (70.6)	72.8 (61.6)	64.7 (58.9)	82.6	Increase	Small numbers and different classes each year make it challenging to evaluate. Even years should be compared to even years, and odd years to odd years. Numbers in parenthesis are BIOL 103 and are not included in larger numbers (AGRI only)
Subject Retention Rates	83.4 (91.2)	87.4 (78.1)	89.1 (93.2)	90.3	Increase	Small numbers and different classes each year make it challenging to evaluate. Even years should be compared to even years, and odd years to odd years. Numbers in parenthesis are BIOL 103 and are not included in larger numbers (AGRI only)
Full-time Load (Full-Time FTEF)	1.08 (.16)	1.03 (.24)	1.27 (.14)	1.10 (.17).	No Change	Small numbers and different classes each year make it challenging to evaluate. Even years should be compared to even years and odd years to odd years. Numbers in parenthesis are F/T Overload. Some class hours were changed to meet TMC
Part-time Load (Part-time FTEF)	.3	.44	.13	.4	No Change	Small numbers and different

							classes each year make it challenging to evaluate. Even years should be compared to even years and odd years to odd years. Numbers in parenthesis are F/T Overload. Some class hours werechanged to meet TMC
PT/FT FTEF Ratio		.28	.42	.11	.36	No Change	Small numbers and different classes each year make it challenging to evaluate. Even years should be compared to even years and odd years to odd years. Numbers in parenthesis are F/T Overload. Some class hours were changed to meet TMC
Other measure							

#	Indicator	Comments and Trend Analysis
7.	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)	
8.	Student success and retention rates by equity groups within discipline	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:
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:

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

		Choose an item.	
		Choose an item.	
		Choose an item.	
		Choose an item.	

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)
	Choose an item.	
	Choose an item.	
	Choose an item.	
Briefly discuss your progress in achieving those goals:		
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 2019-2020. 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 Plan (EMP) and/or Outcomes	Action plan(s) or steps needed to achieve the goal**	Resources needed (Y/N)?
		Choose an item. Choose an item. Choose an item. Choose an item.		Choose an item.
		Choose an item. Choose an item. Choose an item. Choose an item.		Choose an item.
		Choose an item. Choose an item. Choose an item. Choose an item.		Choose an item.
		Choose an item. Choose an item. Choose an item. Choose an item.		Choose an item.

| | | Choose an item.
Choose an item.
Choose an item.
Choose an item. | | Choose an item. |
| | | Choose an item.
Choose an item.
Choose an item.
Choose an item. | | Choose an item. |

__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
	Choose an item.	Choose an item.			Choose an item.	
	Choose an item.	Choose an item.			Choose an item.	
	Choose an item.	Choose an item.			Choose an item.	
	Choose an item.	Choose an item.			Choose an item.	
	Choose an item.	Choose an item.			Choose an item.	
	Choose an item.	Choose an item.			Choose an item.	
	Choose an item.	Choose an item.			Choose an item.	

[1]List needed human resources in priority order. For faculty and staffing request attach Faculty Position Request form.
[2]List needed technology resources in priority order.
[3] In priority order, list facilities/physical resources (remodels, renovations, or new) needed for safer and appropriate student learning and/or work environment.
[4]List needed professional development resources in priority order. This request will be reviewed by the professional development committee.
[5]List any other needed resources in priority order.

2017-2018 Instructional Program Review Annual Update

6. Discipline/Area Name: **Biological and Environmental Sciences: Biology**	For: **2019-2020**

7. Name of person leading this review: **Zia Nisani**

8. Names of all participants in this review: Joseph Esdin, Debra Feickert, Barbara Fredette, Anne Hemsley, Stephen Langjahr, Jedidiah Lobos, Matthew Rainbow, Nikki Riley, Bassam Salameh, George Shahla, Callyn YORKE

9. 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   12

Number of Part-time Faculty   15

Data/Outcome Analysis and Use

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

Indicator	2013-2014	2014-2015	2015-2016	2016-2017	Recent trends?	Comment
Enrollment #	3307	3406	4311	5270	Increase	The Biology enrollment continues to increase
# of Sections offered	94	102	141	190	Increase	
# of Online Sections offered	10	6	11	12	No Change	Our online offerings are limited (due to logistical issues like lab requirements, etc.) and cycle between 6 and about 11 sections.
# of Face-to-Face Sections offered	84	96	130	178	Increase	There has been a significant increase in number of traditional courses offered. There is room to f=grow even more, but we lack faculty and further tech support
# of Sections offered in Lancaster	87	97	135	184	Increase	See above

# of Sections in other locations	7	5	6	6	No Change	With new Palmdale center we can easily double of course offering, but we lack personal.
# of Certificates awarded	n/a	n/a	n/a	n/a	Choose an item.	There are no certificates in biology
# of Degrees awarded	39 (206)	24 (166)	50 (171)	62 (158)	Increase	We have almost doubled the number of AS-Biology degrees offered. The number in parentheses is the LAS-Math & Sciences degree which requires lots of Biology which shows an increasing trend also.
Subject Success Rates	65.8%	66.1%	62.7%	60.3%	Decrease	
Subject Retention Rates	83.8%	83%	82.2%	81.2%	No Change	
Full-time Load (Full-Time FTEF)	13.27 (12.99)	12.53 (11.93)	12.56 (12.52)	12.03 (12.30)	Decrease	"Spring (Fall)" for comments, see below
Part-time Load (Part-time FTEF)	5.27 (5.16)	7.07 (6.6)	8.53 (7.03)	8.03 (7.17)	Increase	We have been increasing our adjuncts (in many cases over loading when possible) due to lack of FT faculty. Also many FT faculty have overloads which this form does not reflect.
PT/FT FTEF Ratio	0.4 - 0.4	0.6 – 0.6	0.7 – 0.6	0.7 – 0.6	No Change	After initial increase from 2013-14, the ration has been steady. (The ratios reflect Fall/Spring respectively). If we account for FT overload, these ratios will even be smaller.
Other measure						

#	Indicator	Comments and Trend Analysis
7.	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)	*FROM PREVIOUS REPORT-* BIOL 102, a non-majors transfer GE course, shows a Spring 2016 success rate of 51.3%, and retention rate 79.5%. SLO 4 (Construct the physiological basis for function of each major organ system of the human body) and SLO 8 (Understand and use the scientific method to formulate, perform and analyze simple scientific experiments) achievement targets were not met in 2015-2016. An Action Plan to implement AVID teaching methodology was proposed. Biology faculty (Barbara Fredette) has received AVID training during summer 2017, and Avid program teaching strategies are presently being tested in BIOL 102. First exam scores show a dramatic increase over Spring 2015 scores. This program will continue, and a comparison of pre-Avid program and post-AVID success rates will be made.

		AVID teaching methods are also being implemented in one BIOL 101 section.
8.	Student success and retention rates by equity groups within discipline	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:
		FROM PREVIOUS REPORT- We consider all races and genders relevant to the Biology program. The success and retention rates in total are 64% and 82% for females, 65% and 82% for males and 66% and 81% for not declared. There has been an increase of 2-3% in success rates from our previous report, with the retention rates are holding steady.
		These success rate values are slightly lower than the 69.1% rate set by the institution. One possible explanation is that biology courses is a more rigorous and students need better preparation before enrolling. Furthermore, a breakdown of gender success by courses reveals that we have to focus our efforts in Biology 101, 201 and 202 courses. The other courses the success rates are above the institutional 69.1% rate.
		Looking at success and retention rates for specific race/ethnicity groups, Asian students have the highest rates (74% & 87%) followed by white/Non-Hispanics (72% & 86%) with Hispanics/Latino (60% & 80%) and Black/African Americans (50% & 79%) ranking 3rd and 4th. When data is examined across genders, the success and retention as whole are very similar with Asian students performing the best, followed by Hispanics/Latino and Black/African Americans. The rates for Asians and White/non-Hispanics are up from the previous report and meet institution's target. As for Hispanics the change is not significant while Black/African Americans have seen an increase in their retention rates but not success rate. This unfortunate trend seems to be camps wide (nationwide for that matter). Therefore, there is a need for not only departmental dialogue (and division in whole) but campus wide to address this gap.
		During the 2006-2007 academic year, a biology faculty member (Nikki Riley) conducted a dissertation study at AVC to explore the following questions: What policies, resources and/or practices do African American male students perceive as positively contributing to their decision to continue enrolling in a California community college? and (2) What do African American male students identify as barriers to their persistence in a California community college?
		College administrators, faculty and staff were also interviewed to gain an institutional perspective while comparing the responses of and by these stakeholders. The data reflected the diversity of life experiences within the sample population and highlighted the necessity of reducing homogenous perspectives when developing support and resources for all students in special populations.
		Within the respective study population, help-seeking behavior, faculty and staff relationships, familial support, accurate counseling services, along with both the social and academic integration were all positive and influential factors that contributed to the academic persistence and success within the group studied.

		A more recent and possible solution to address this topic is the implementation of the"PreparED Learning" program in which subject related, self-remediation resources are accessible to underpr enrolled in class. We hope to test this program in Biology 101 class in Fall 2018 and we will pay special attention to closing the score gaps with minority 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: 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. **FROM PREVIOUS REPORT**

SLO/PLO/OO/ILO	Action Plan	Current Status	Impact of Action
SLO 2 (Biol 120)	Implementing an Inquiry-based approach to teaching biology 120 (required purchasing additional equipment and supplies).	**Completed**	With acquisition of new equipment in Spring 2015, and implementation (Fall 2015) of new hands-on inquiry based approaches in lab and lecture, we were able to meet the set SLO targets, and mean lab final scores increased substantially (70 ± 17, N = 28). This change was shown to be statistically significant, t(99) = 5.31, p < 0.0001.
SLO 1 (Biol 204)	Purchasing additional equipment and supplies	**Completed**	Certain laboratory techniques require student skills to be developed over time. The addition of benchtop vortex machines, slide heaters and new Quebec colony counters has greatly accelerated success in laboratory skill development, with proficiency in staining and culturing being observed at an earlier point in the semester.
		Choose an item.	
		Choose an item.	

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.　　　　　**FROM PREVIOUS REPORT**

Goals/Objectives	Current Status	Impact of Action (describe any relevant measures/data used to evaluate the impact)
Reform instructional methodology to include Inquiry-	Ongoing	Biology 120 overall scores (and meeting set SLO targets) have increased ever since introducing inquiry-based hands on labs, case studies and phylogenetic thinking into curriculum. Even though

based learning.		these were implemented in Fall 2015, we expect the trend to continue. Thus, we recommend that the departmental try to institute inquiry-based learning in more courses.
Improvement of student learning outcomes.	Ongoing	Grades earned in Biology courses show consistent percentages of A, B, C, D and F grade allocations over the five year time period surveyed. The percentage student success rate in Biology courses are slightly lower than the 69.1% goal required by the college. The breakdown of success rate show that Biology 110, 120, and 204 do meet the college's goal, but Biol 101, 201, and 202 do not. We recommend allocation of more resources in order to help the students with these classes.
Develop an undergraduate research (UR) Program.	Ongoing	Few faculty are conducting research with some of their students with some success. In 2015, two students presented their research at the Southern California Natural History Society meeting. Currently, we have one paper under consideration for publication (review) and just completed another project.

Briefly discuss your progress in achieving those goals:
- The implantation if inquiry-based teaching in Biology 120 has significantly increased student success rates in this course.

Please describe how resources provided in support of previous program review contributed to program improvements:

(2) Using the grant money we purchased skeletal specimens and slides along with Dissecting and Compound Microscopes with digital photography capabilities (and appropriate laptops) and implemented an Inquiry-based approach to covering Biodiversity across taxa (especially Animalia). These streams allowed students to collect data and record their observations (along with digital images) of various specimens and structures. Student research teams recorded and organized the observations that they made and analyzed their data in a phylogenetic framework. During these streams, students were able to work through a set of exercises designed to help them learn how to read, interpret, and manipulate phylogenetic trees (which tied-in well with SLOs 1, 4, 5).

With acquisition of new equipment that happened in Spring 2015 and implementation (Fall 2015) of new hands-on inquiry based approaches in lab and lecture, not only we were able to meet the set SLO target but mean lab final scores increased substantially (70 ± 17, N = 28) This change was shown to be statistically significant, $t(99) = 5.31$, $p < 0.0001$.

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 2019-2020. 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).**   *FROM PREVIOUS REPORT*

Goal #	Discipline/area goal and objectives	Relationship to Strategic Goals* in Educational Master Plan (EMP) and/or Outcomes	Action plan(s) or steps needed to achieve the goal**	Resources needed (Y/N)?
1	Improvement of student learning outcomes	1. Commitment to strengthen Institutional Effectiveness measures and	The demand for biology coursing is trending upward. To meet this demand we have to expand (along with regular semester) our summer and intersession course offerings. To	Yes

		*3. Focus on utilizing proven instructional strategies that will fostertransferable intellectual skills Choose an item. Choose an item.	meet this course expansion we need to purchase more charts, models, slides and additional articulate animal skeletons for Biology majors & non-majors, Anatomy and Physiology courses, and hire more full-time faculty members, and biology techs. To meet these needs we need to allocate more financial resources for purchasing.	
2	Reform instructional methodology to include Inquiry-based learning	*3. Focus on utilizing proven instructional strategies that will fostertransferable intellectual skills *2. Increase efficient and effective use of all resources: Technology, Facilities, Human Resources, Business Services 1. Commitment to strengthen Institutional Effectiveness measures and Choose an item.	Purchasing of equipment that will facilitate hands-on and inquiry-based, and Creation and support of workshops and other professional development opportunities	Yes
3	Develop an undergraduate research (UR) Program.	1. Commitment to strengthen Institutional Effectiveness measures and *3. Focus on utilizing proven instructional strategies that will fostertransferable intellectual skills - Other Reasons Choose an item.	There needs to be a campus wide dialog on how we can increase faculty participation. Issues such as incentives, credit hours for students and faculty needs to be addressed.	Yes
		Choose an item. Choose an item. Choose an item. Choose an item.		Choose an item.
		Choose an item. Choose an item. Choose an item. Choose an item.		Choose an item.
		Choose an item. Choose an item. Choose an item. Choose an item.		Choose an item.

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**.   *FROM PREVIOUS REPORT*

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 Biology lab tech	$59,000 annually	Recurring	
1 & 2	Technology	New	HD Digital macro zoom system to be used as a 3-D display unit with the existing projector, so that instructors can demonstrate 3-dimensional materials to the entire class.	$6,177	One-time	
1	Technology	New	In order to safely and humanely house a greater number of laboratory rats and mice at any one time, expansion of our caging facilities is necessary.	$18,000	One-time	
1	Personnel	New	With increase demand for courses, some faculty (specializing in Anatomy & Physiology) will be shifted from teaching Biology 101 to Biol 201 and 202. Thus there will be a need to hire a fulltime faculty to teach General biology (and other majors courses)	Rate determined at time of hire	Recurring	
1 & 2	Technology	New	Anatomical models and supporting materials for all biology labs are subject to heavy use and wear. The faculty identified worn/damaged material and newly available models for improved laboratory instruction.	$35,000	One-time	
1	Technology	New	Anatomical models and lab supplies specific to the LVN biological sciences curriculum for Biology 100 (Introductory Anatomy and Physiology course) have been identified. SLO data for some physiology concepts (SLO7) are below that of the College's New labs (along with manual) will be implemented to enhance and improve student learning outcomes in the basic physiology of various organ systems. These models and supplies will also be used for forensics lab exercises for Science Olympiad and STEM for Girls activities, for additional sections of Biology 201 for scenarios when courses run concurrently in rooms HS133 and HS127—the classes can be run with adequate supplies.	$68, 833.53	One-time	

[1]List needed human resources in priority order. For faculty and staffing request attach Faculty Position Request form.

[2]List needed technology resources in priority order.

[3] In priority order, list facilities/physical resources (remodels, renovations, or new) needed for safer and appropriate student learning and/or work environment.

[4]List needed professional development resources in priority order. This request will be reviewed by the professional development committee.

[5]List any other needed resources in priority order.

2017-2018 Instructional Program Review Annual Update

1. Discipline/Area Name: Mathematics	For: **2017-2018**
2. Name of person leading this review: Tooraj Gordi	
3. Names of all participants in this review: Tooraj Gordi	

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 20

Number of Part-time Faculty 36

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	2013-2014	2014-2015	2015-2016	2016-2017	Recent trends?	Comment
Enrollment #	12761	13442	14058	14237	Increase	1.3% increase since previous year
# of Sections offered	417	387	499	643	Increase	
# of Online Sections offered	29	31	31	28	Decrease	
# of Face-to-Face Sections offered	388	356	468	617	Increase	
# of Sections offered in Lancaster	364	334	444	597	Increase	
# of Sections in other locations	53	53	50	46	Decrease	Not a significant change
# of Certificates awarded	NA	NA	NA	NA	Choose an item.	
# of Degrees awarded	41	32	59	43	Increase	
Subject Success Rates	59.8%	58.2%	60.7%	65%	Increase	
Subject Retention Rates	82.8%	81.4%	83.4%	84.7%	Increase	
Full-time Load (Full-Time FTEF)	17.27	16.52	17.44	17.81	Increase	

Part-time Load (Part-time FTEF)	14.52	16.72	18.36	17.39	Increase	
PT/FT FTEF Ratio	0.84	1.01	1.05	0.98	Increase	
Other measure						

#	Indicator	Comments and Trend Analysis
7.	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)	Same as previous year report.
8.	Student success and retention rates by equity groups within discipline	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: New statistics indicate that success rate among three major ethnic groups has increased by 8 points for black students (48% to 54% which is below the institutional standard), 5 points for whites (68% to 72%, meets the institutional standard) and 8 points for Hispanics (57% to 65%, near the standard). No disparities of gender success are obvious. The success rates are at 66% (F) and 64% (M).
9.	Career Technical Education (CTE) programs: Review the labor market data on the California Employment Development Department website for jobs related to your discipline.	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
		Ongoing	Same as last year's

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)
Pathways	Ongoing	A curriculum committee of 5 math faculty was formed to develop pathways at the basic skills level and reduce the number of terms students require to move to the transfer level.
Technology	Ongoing	Licenses to Mathematica software were purchased but went unnoticed for 11 months and never delivered to the math department due to miscommunication. The Mathematics Department requests the license renewal.

Briefly discuss your progress in achieving those goals:
Curriculum committee met several times during the year and proposed two new courses to replace Algebra sequence (MATH 70 and 102) in the flow chart.

Please describe how resources provided in support of previous program review contributed to program improvements:
Basic Skills Committee and Learning Center provided financial support and man power to continue with the summer bridge program, in-class tutoring and MATH 001 tutors.

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 2019-2020. 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 Plan (EMP) and/or Outcomes	Action plan(s) or steps needed to achieve the goal**	Resources needed (Y/N)?
1	Basic Skills Area, AB 705, and Multiple Measures	*4. Advance more students to college-level coursework. Choose an item. Choose an item. Choose an item.	This is a new and unknown territory for all community colleges in California. Early indications are that the number of Basic Skills courses in the math department are likely to decrease and consequently the department is likely to add more collegiate courses	Yes
2	Technology	*2. Increase efficient and effective use of all resources: Technology, Facilities, Human Resources, Business Services Choose an item. Choose an item. Choose an item.	Renew the Mathematica license and expansion of MATH 001 in Palmdale	Yes
3	Basic Skills Area: Addressing prospective AVC students	*4. Advance more students to college-level coursework. Choose an item. Choose an item. Choose an item.	Continue with the Summer Bridge program and promote Senior Math Acceleration Program (SMAP) at more local high schools	Yes

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
2	Personnel	Repeat	Renew Mathematica MATH 001 Lab technician and tutors for Palmdale Center		Recurring	T. Gordi
3	Personnel	Repeat	Support faculty and tutors		Recurring	T. Gordi S. Bowers
1	Personnel	New	Release time or stipend for faculty who will have to develop support courses in order to be in compliance with AB 705		One-time	T. Gordi
	Choose an item.	Choose an item.			Choose an item.	
	Choose an item.	Choose an item.			Choose an item.	
	Choose an item.	Choose an item.			Choose an item.	
	Choose an item.	Choose an item.			Choose an item.	

[1]List needed human resources in priority order. For faculty and staffing request attach Faculty Position Request form.

[2]List needed technology resources in priority order.

[3]In priority order, list facilities/physical resources (remodels, renovations, or new) needed for safer and appropriate student learning and/or work environment.

[4]List needed professional development resources in priority order. This request will be reviewed by the professional development committee.

[5]List any other needed resources in priority order.

2017-2018 Instructional Program Review Annual Update

1. Discipline/Area Name: **Physical Sciences and Engineering** (ASTR, CHEM, ERSC, ENGR, GEOG, GEOL, PSCI, PHYS)	For: **2019-2020**

2. Name of person leading this review: **Christos Valiotis**

3. Names of all participants in this review: Jason Bowen, Aurora Burd, Jonathan Compton, Jeff Cooper, Jessica Harper, Carlos Hernandez, Mark McGovern, David Newman, Mike Pesses, Paul Stahmann, Alex Schroer, Joe Towe.

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   12   **Number of Part-time Faculty**   12

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	2013-2014	2014-2015	2015-2016	2016-2017	Recent trends?	Comment
Enrollment #	4545	4466	4503	4025	No Change	
# of Sections offered	168	177	177	183	Increase	
# of Online Sections offered	2	1	1	1	No Change	One online Chem section was offered during 2013-14.
# of Face-to-Face Sections offered	166	176	176	182	Increase	
# of Sections offered in Lancaster	161	171	171	177	Increase	
# of Sections in other locations	6	6	6	6	No Change	
# of Certificates awarded	0	0	0	0	No Change	N/A
# of Degrees awarded	40	18	59	49	No Change	No clear reason for the fluctuation
Subject Success Rates	72.3	72.5	70.9	75.4	No Change	

Subject Retention Rates	88	88	87	90	No Change	
Full-time Load (Full-Time FTEF)	23.93	21.66	22.30	23.27	No Change	
Part-time Load (Part-time FTEF)	25.07	26.99	25.24	25.38	No Change	
PT/FT FTEF Ratio	1.05	1.27	1.13	1.10	No Change	The PT/FT continues to remain above 1. More students are taught by adjuncts and FT overload rather than FT faculty.
Other measure						

#	Indicator	Comments and Trend Analysis
7.	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)	
8.	Student success and retention rates by equity groups within discipline	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:
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:

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
		Choose an item.	
		Choose an item.	
		Choose an item.	
		Choose an item.	

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)

	Choose an item.	
	Choose an item.	
	Choose an item.	
Briefly discuss your progress in achieving those goals:		
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 2019-2020. 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 Plan (EMP) and/or Outcomes	Action plan(s) or steps needed to achieve the goal**	Resources needed (Y/N)?
		Choose an item. Choose an item. Choose an item. Choose an item.		Choose an item.
		Choose an item. Choose an item. Choose an item. Choose an item.		Choose an item.
		Choose an item. Choose an item. Choose an item. Choose an item.		Choose an item.
		Choose an item. Choose an item. Choose an item. Choose an item.		Choose an item.
		Choose an item. Choose an item. Choose an item. Choose an item.		Choose an item.
		Choose an item. Choose an item. Choose an item. Choose an item.		Choose an item.

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
	Choose an item.	Choose an item.			Choose an item.	
	Choose an item.	Choose an item.			Choose an item.	
	Choose an item.	Choose an item.			Choose an item.	
	Choose an item.	Choose an item.			Choose an item.	
	Choose an item.	Choose an item.			Choose an item.	
	Choose an item.	Choose an item.			Choose an item.	
	Choose an item.	Choose an item.			Choose an item.	

[1]List needed human resources in priority order. For faculty and staffing request attach Faculty Position Request form.

[2]List needed technology resources in priority order.

[3] In priority order, list facilities/physical resources (remodels, renovations, or new) needed for safer and appropriate student learning and/or work environment.

[4]List needed professional development resources in priority order. This request will be reviewed by the professional development committee.

[5]List any other needed resources in priority order.

2017-2018 Instructional Program Review Annual Update

1. Discipline/Area Name: **Biological & Environmental Sciences: Water Treatment WDTO**	For: **2019-2020**

2. Name of person leading this review: **Zia Nisani**

3. Names of all participants in this review: Tobey Taube, Peter Thompson

| 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.
 ☒XX 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 [0]   **Number of Part-time Faculty** [2]

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	2013-2014	2014-2015	2015-2016	2016-2017	Recent trends?	Comment
Enrollment #	124	99	60	89	Increase	
# of Sections offered	5	5	5	5	No Change	
# of Online Sections offered	0	0	0	0	Choose an item.	
# of Face-to-Face Sections offered	5	5	5	5	No Change	
# of Sections offered in Lancaster	5	5	5	5	No Change	
# of Sections in other locations	0	0	0	0	Choose an item.	
# of Certificates awarded					Choose an item.	
# of Degrees awarded					Choose an item.	
Subject Success Rates	67.7	62.6	66.7	44.9	Decrease	
Subject Retention Rates	87.9	79.8	91.7	83.1	Decrease	
Full-time Load (Full-Time FTEF)	0	0	0	0	Choose an item.	

Part-time Load (Part-time FTEF)	0.5	0.5	0.5	0.5	No Change	
PT/FT FTEF Ratio					Choose an item.	
Other measure						

#	Indicator	Comments and Trend Analysis
7.	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)	
8.	Student success and retention rates by equity groups within discipline	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:
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:

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
		Choose an item.	
		Choose an item.	
		Choose an item.	
		Choose an item.	

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)
	Choose an item.	
	Choose an item.	
	Choose an item.	
Briefly discuss your progress in achieving those goals:		

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 2019-2020. 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 Plan (EMP) and/or Outcomes	Action plan(s) or steps needed to achieve the goal**	Resources needed (Y/N)?
		Choose an item. Choose an item. Choose an item. Choose an item.		Choose an item.
		Choose an item. Choose an item. Choose an item. Choose an item.		Choose an item.
		Choose an item. Choose an item. Choose an item. Choose an item.		Choose an item.
		Choose an item. Choose an item. Choose an item. Choose an item.		Choose an item.
		Choose an item. Choose an item. Choose an item. Choose an item.		Choose an item.
		Choose an item. Choose an item. Choose an item. Choose an item.		Choose an item.

***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
	Choose an item.	Choose an item.			Choose an item.	
	Choose an item.	Choose an item.			Choose an item.	
	Choose an item.	Choose an item.			Choose an item.	
	Choose an item.	Choose an item.			Choose an item.	
	Choose an item.	Choose an item.			Choose an item.	
	Choose an item.	Choose an item.			Choose an item.	
	Choose an item.	Choose an item.			Choose an item.	

[1]List needed human resources in priority order. For faculty and staffing request attach Faculty Position Request form.

[2]List needed technology resources in priority order.

[3]In priority order, list facilities/physical resources (remodels, renovations, or new) needed for safer and appropriate student learning and/or work environment.

[4]List needed professional development resources in priority order. This request will be reviewed by the professional development committee.

[5]List any other needed resources in priority order.