



MSE Division 2019-2020 Program Review Report

Division/Area Name: MSE Division--Agriculture: Park and Landscape Management	For Years: 2021-2022
Name of person leading this review:	Sharon Weisenberger
Names of all participants in this review:	Sharon Weisenberger, Denise Keef, Heather Kock

Part 1. Program Overview:

1.1. Briefly describe how the program contributes to the district <u>mission</u>	
The program offers vocational certificates, associate degrees and/or educational curriculum, which provide qualified, entry level and advanced placement individuals for business and industry.	
1.2. State briefly program highlights and accomplishments	
The nature of the program is to help train the future workforce. We currently have graduates of the program working in or at: Seattle Mariners Stadium, City of Lancaster, City of Palmdale, City of Santa Clarita, County of Los Angeles, State of California, Antelope Valley College, Lowes, Home Depot, Local Nurseries and landscape suppliers as well as employees of various other public and private business. We also have graduates that have started their own gardening business, took and passed their landscape contractor's license, and became landscape designers. Being a major that is found at 4-year schools, we have students that transfer to 4-year college and universities and became Agriculture Teachers, Landscape Architects, Greenhouse Managers, and Soil Scientists. Two of the Adjunct Instructors are program graduates.	
1.3. Check each <u>Institutional Learning Outcome (ILO)</u> supported by the program. Type an "X" if checkbox is unavailable.	
X Communication	X Demonstrates analytical reading and writing skills including research, quantitative and qualitative evaluation and synthesis. Demonstrates listening and speaking skills that result in focused and coherent communications
X Creative, Critical, and Analytical Thinking	X Uses intellectual curiosity, judgment and analytical decision-making in the acquisition, integration and application of knowledge and skills. X Solves problems utilizing technology, quantitative and qualitative information and mathematical concepts.
X Community/Global Consciousness	X Understands and applies personal concepts of integrity, ethics, self-esteem, lifelong learning, while contributing to the well-being of society and the environment.

	Demonstrates an awareness and respect of the values of diversity, complexity, aesthetics and varied cultural expressions.
X Career and Specialized Knowledge	X Demonstrates knowledge, skills and abilities related to student educational goals, including career, transfer and personal enrichment.
1.4. Check each <u>Educational Master Plan (EMP)/Strategic Plan Goal</u> supported by the program. Type an "X" if checkbox is unavailable.	
X Goal 1* : Commitment to strengthening institutional effectiveness measures and practices.	
Goal 2* : Increase efficient and effective use of resources: Technology; Facilities; Human Resources; Business Services.	
Goal 3 : Focus on utilizing proven instructional strategies that will foster transferable intellectual skills.	
Goal 4* : Advance more students to college-level coursework-Develop and implement effective placement tools.	
X Goal 5 : Align instructional programs to the skills identified by the labor market.	

*Indicates College-Wide Priorities for 2019-2020

Part 2.A. Please provide the results of any internal and external environmental scan information you have gathered related to the program e.g. surveys, interviews, focus groups, advisory groups, licensure exam scores, job placement, State mandates, etc.:

The nature of the program is to help train the future workforce. We currently have graduates of the program working in or at: Seattle Mariners Stadium, City of Lancaster, City of Palmdale, City of Santa Clarita, County of Los Angeles, State of California, Antelope Valley College, Lowes, Home Depot, Local Nurseries and landscape suppliers as well as employees of various other public and private business. We also have graduates that have started their own gardening business, took and passed their landscape contractor's license, and became landscape designers. Being a major that is found at 4-year schools, we have students that transfer to 4-year college and universities and became Agriculture Teachers, Landscape Architects, Greenhouse Managers, and Soil Scientists.

Part 2.B. Analyze the program review data (please see the program review data retrieval instructions and attach your program review data page with any other supporting documents), the above environmental scan information, and anything else related to your area to identify the program strengths, weaknesses, opportunities, & threats (SWOT):

Strengths	<ul style="list-style-type: none"> • The hands-on nature of the program gives the students the needed skills to join the workforce, whether it is as an employee or a small business owner. • Classes receiving hands-on training doing actual landscape projects in commercial and residential settings. • The program's strong link to the community, county, and State Landscape industry. • The program's strong community involvement. • The student retention and success rate exceed the college rate in all but two of the eight samples and was just below the school average in those two samples. • Retention rates are consistently above 90% well over the AC average of 87%. Similarly success rates are in the high 80's which is significantly higher than the AVC average of 73%.
------------------	--

Weaknesses	<ul style="list-style-type: none"> • The program currently offers less than 10 certificates per year as it continues to struggle to attract enrollment (See data page at the end of this report). • The program not having a full-time faculty member to oversee the program. Many classroom curricular projects bridge classes from semester to semester or from class to class. The lack of coordination will be very difficult for the program to overcome. • Keeping the curriculum up to date with college’s curriculum requirements. • Although it is well known and publicized in the community, more information always helps. • Staffing of the facilities on a short-term situation such as when Lab technician is on vacation, injured or sick. • The program is lacking in tools and equipment to efficiently operate the program and rising up to industry standards in modern tools and equipment. • Use of the Agriculture/Landscape Advisory Committee more efficiently. • Working with Maintenance/Grounds for coordinating supplies, equipment and safety training. • Statistically our weakness is retention and success of African American students. This would be a non-traditional field of study or occupation for African American students. Our enrollment for this group of students is very low, which can affect results.
Opportunities	<ul style="list-style-type: none"> • With changing requirements regarding water use in residential, commercial and agriculture use. The program and college could aid the research and train students for these emerging careers.
Threats	<ul style="list-style-type: none"> • The program not having a full-time faculty member to oversee the program. Many classroom curricular projects bridge classes from semester to semester or from class to class. The lack of coordination will be very difficult for the program to overcome.

Part 2.C. Review and comment on progress towards SLO/PLO/OO Action Plans:

SLO’s and PLO’s over the past years have meet or exceeded their goals. As for the action plans, many of the action plans have not been completed due to lack of funding or they are still ongoing. We will always continue to strive to improve classroom learning, which includes hands-on training in labs. Most of the action plans that require funding are identical to the program review goals.

Part 2.D. Review and comment on progress towards past program review goals:

Most of the program review goals have not been complete due to lack of funding or they are still ongoing. We will always continue to strive to improve classroom learning, which includes hands-on training in labs.

Part 3. Based on Part 2 above, please list program/area goals for 2020-2021:

Program/Area Goal #	Goal supports which ILO/PLO/SLO/OO?	Description of Goal	Steps to be taken to achieve goal?
----------------------------	--	----------------------------	---

<p>Maintain a clean, safe and functional learning and work environment</p>	<p>Goal 2*: Increase efficient and effective use of resources: Technology; Facilities; Human Resources; Business Services. Goal 5: Align instructional programs to the skills identified by the labor market.</p> <p>Indirectly and directly apply to all PLO's and SLO's</p>		<p>Action #1. Build tool Racks to safely store tools. Action #2. Develop a plan and implement the plan to increase staffing on a part-time/hourly basis to support the program. This is an ongoing goal of health and safety. Organization of materials used in classes has been slow since moving into new facilities in which some storage issues have never been finished.</p> <p>Repairing and replacing equipment and facilities with safety issues has been an uphill battle within the program.</p> <p>With the lack of a full-time instructor in the program, class projects than run through several semesters cannot be done. The Lab technician is often unaware of ongoing class projects and the communication of what equipment is working or not is not always addressed to all faculty in the program</p>
<p>Design and Landscape Facilities</p>	<p>Goal 2*: Increase efficient and effective use of resources: Technology; Facilities; Human Resources; Business Services. Goal 5: Align instructional programs to the skills identified by the labor market.</p>	<p>It has always been part of the curriculum to install and maintain landscapes. Even as landscapes age they will need to continue to be redesigned at the current industry standards. The challenge has always been the ability to offer classes in a timely manner. Most</p>	<p>Action #2. Develop a plan and implement the plan to increase staffing on a part-time/hourly basis to support the program.</p>

	Indirectly and directly apply to all PLO's and SLO's	of the classes are offered on a two-year rotation, which means if a project is partially completed it may take another 2 years to complete. If completed by personnel other than the students, the students lose the opportunity to learn the job skills needed in the industry.	
Develop a plan to maintain facilities	<p>Goal 2*: Increase efficient and effective use of resources: Technology; Facilities; Human Resources; Business Services.</p> <p>Goal 5: Align instructional programs to the skills identified by the labor market.</p> <p>Indirectly and directly apply to all PLO's and SLO's</p>	Most of the classes are offered on a two-year rotation, which means if a project is partially completed it may take another 2 years to complete. If completed by personnel other than the students, the students lose the opportunity to learn the job skills needed in the industry.	
Decrease the time to certificate completion.	<p>Goal 1*: Commitment to strengthening institutional effectiveness measures and practices.</p> <p>Goal 2*: Increase efficient and effective use of resources: Technology; Facilities; Human Resources; Business Services</p> <p>Goal 5: Align instructional programs to the skills identified by the labor market.</p>	Most of the classes are offered on a two-year rotation, which means if a project is partially completed it may take another 2 years to complete.	<p>Replace full time faculty and expand the course offerings in the program.</p> <p>Step 1 – Determine which classes should be increased in offering</p> <p>Step 2 – Determine the frequency the classes.</p> <p>Step 3 – Determine if day-time classes are needed.</p>

	Indirectly and directly apply to all PLO's and SLO's		The action items that require funding is primarily decrease the time between some of the classes
Incorporate industry standard tools and equipment.	<p>Goal 2*: Increase efficient and effective use of resources: Technology; Facilities; Human Resources; Business Services.</p> <p>Goal 5: Align instructional programs to the skills identified by the labor market.</p> <p>Indirectly and directly apply to all PLO's and SLO's</p>	Tools continue to break or wear out, replacement with newer modern tools that students will use when gaining employment.	Much of this goal could be obtain using VTEA funds.

Part 4. Resource Requests that Support Program Needs (Based on above analyses and listed in priority order):

<i>Type of Resource Request</i>	<i>Summary of Request</i>	<i>New or Repeat Request</i>	<i>Amount of Request, \$</i>	<i>One-Time or Recurring Cost, \$</i>	<i>Contact's Name</i>
<i>Faculty</i>	Replacement of only fulltime Faculty	Repeat	100,000	Recurring	
<i>Classified Staff</i>	Additional Hourly or Substitute Lab Technician when lab tech is on vacation or out for an extended time	Repeat	5,000	Recurring	
<i>Technology</i>	A technology budget to replace or come up to industry standards on annual busses	Repeat	5,000	Recurring	
<i>Physical/Facilities</i>	Green House Maintenance and Repair	Repeat	2,000	Recurring	
<i>Physical/Facilities</i>	Doors needed to be added or changed to prevent students from entering outdoor lab when staff are not present. With the addition of non-discipline classes in the facility	Repeat	10-20,000	One-time	

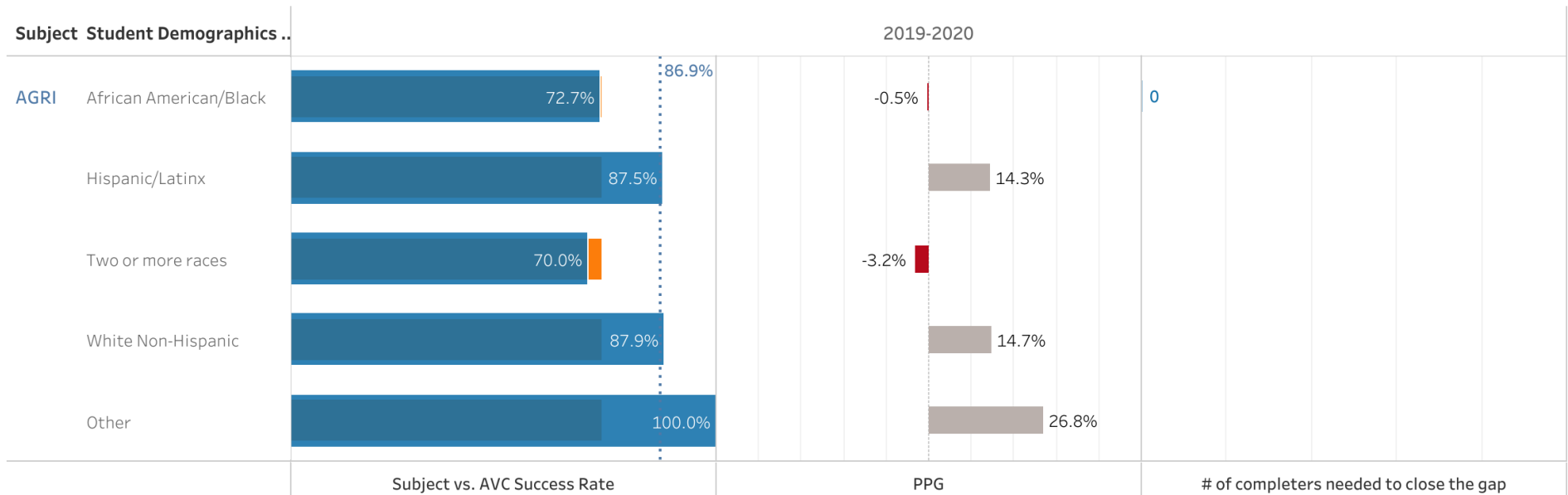
	it is impossible to prevent students from entering greenhouses and the outdoor lab. Materials have been stolen due to the building and lab area being left unlocked. When non-ag classes use the facilities, it compromises the safety and security of the learning laboratory. If a student falls or injuries themselves with no supervision in the area it could be hours before help could find them. Labs could not be complete due to complete access to the facilities.				
Supplies	Supplies Tools, plant material, irrigation	Repeat	2000	Recurring	
Professional Development					
Other					

Part 5. Insert your Program Review Data here, as well as any other supporting data. (See Part 2.B above.)



2019-2020 Disproportionate Impact as Percentage Point Gap (PPG)

Blue Bars show Success Rate (SR) within the sub-Groups vs. AVC Annual SR (orange bar) vs. AGRI Annual SR (dotted line)



In 2019-2020, AGRI's Success Rate was 86.9% vs. AVC's Annual rate of 73.2%

Overall Disproportionate Impact as percentage point gap was : 13.7%

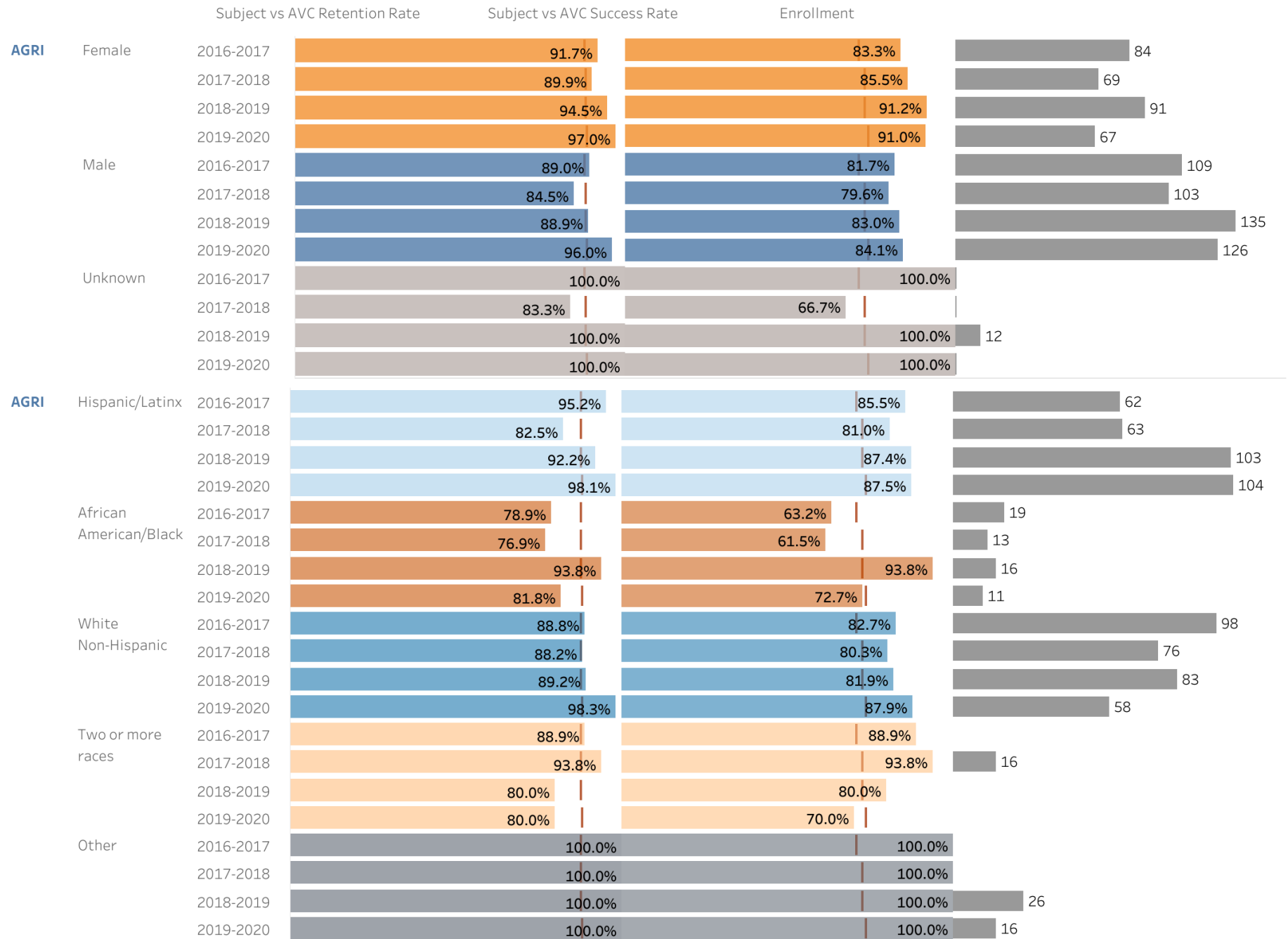
In AGRI, 199 was the enrollment count (duplicated headcount) (only shows if $n > 10$)

If there is a Disproportionate impact (PPG is negative), multiply the absolute value of PPG by the number of students and divide it by 100 to determine how many more successful completers would eliminate the gap.

(For example, $(199 * |13.7\%|) = 27$. it means that 27 more successful course completers would help close the gap for this subject area)

(Hover over each bar in the chart to see details about each sub-group)

Subject-Level Retention, Success, and Enrollment by Gender & Race/Ethnicity as Compared to AVC's Rates (I)



Please Select **Subject** area (twice) and **Program Major(s)** to get your data --->

Select Subject
AGRI

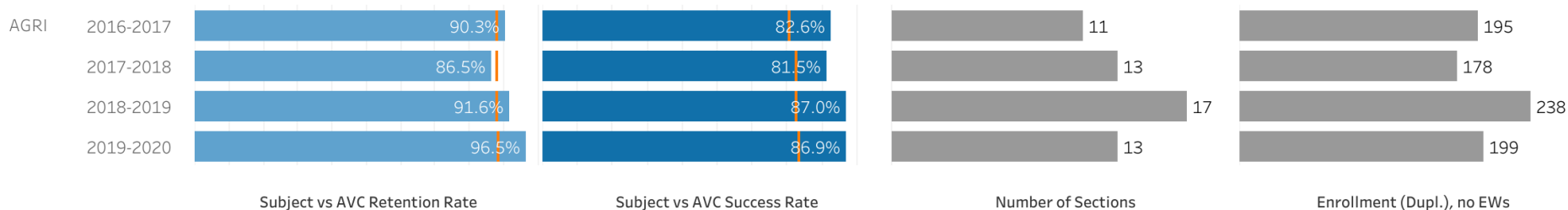
Select Subject again
AGRI

Select Program Major(s)
Multiple values

Academic Year
Multiple values



Retention, Success, Number of Sections, & Enrollment in AGRI (Total AVC rates are shown as | hover over to see data)



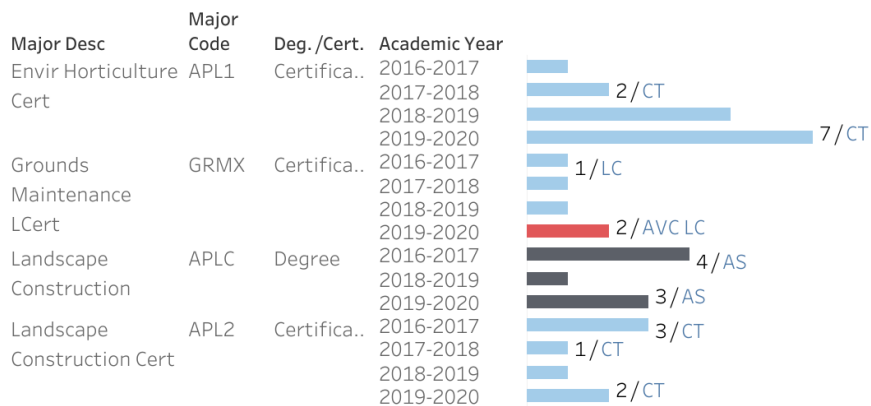
Enrollment and Number of Sections by *Modality* in AGRI

	Instr. Method	2016-2017	2017-2018	2018-2019	2019-2020
Number of Sections	Other Indep S..		1	4	1
	Traditional	11	12	13	12
Enrollment	Other Indep S..		1	5	5
	Traditional	195	177	233	200

Enrollment and Number of Sections by *Location* in AGRI

	Location	2016-2017	2017-2018	2018-2019	2019-2020
Number of Sections	Lancaster	11	13	17	13
Enrollment	Lancaster	195	178	238	205

Number of Degrees/Certificates Awarded in Envir Horticulture Cert (APL1), Grounds Maintenance LCert (GRMX), Landscape Construction (APLC) and 1 more



Number of Awards

FTEF by Contract Type, Part-time/Full-time Ratio, FTES, FTES/FTEF in AGRI

	Fall 2016	Fall 2017	Fall 2018	Fall 2019
PT/Adjunct	0.7	0.5	0.6	0.8
FT/Regular	0.6	0.4	0.5	
FT/Overload	0.2	0.1		
TOTAL FTEF	1.4	1.0	1.1	0.8
PT/FT	1.2	1.1	1.2	
FTES	13.7	10.8	13.7	12.1
FTES/FTEF Ratio	9.6	11.3	12.5	14.8
WSCH/FTEF Ratio	286.5	339.5	374.7	443.0

Click [here](#) to see AVC's Program awards dashboard

Division/Area Name: MSE Division-Astronomy	For Years: 2021-2022
Name of person leading this review: Mark McGovern	
Names of all participants in this review: Mark McGovern	

Part 1. Program Overview:

1.1. Briefly describe how the program contributes to the district <u>mission</u>	
Astronomy provides courses that satisfy general education requirements. Completion of these courses allows students to fulfill degree requirements or enroll in upper division courses and programs at accredited four-year institutions through our articulation agreements.	
1.2. State briefly program highlights and accomplishments	
The astronomy discipline contains only two classes, lecture and lab. In the lecture portion (ASTR 101), the discipline has recently expanded its online course offerings. Typically, a hybrid section was only offered in the spring semester but now we are offering a hybrid section in the fall as well. Additionally, we resumed offering an honors section in the spring after taking a brief break from doing so. For the lab portion (ASTR 101L), the discipline has expanded its lab activities to incorporate more online simulation resources and, in the process, a formal lab manual is being written to organize activities. Outside of the courses, the VSL (Virtual Science Lab) has expended its catalog of shows and resources to support both instruction and community outreach.	
1.3. Check each <u>Institutional Learning Outcome (ILO)</u> supported by the program. Type an "X" if checkbox is unavailable.	
X Communication	X Demonstrates analytical reading and writing skills including research, quantitative and qualitative evaluation and synthesis. <input type="checkbox"/> Demonstrates listening and speaking skills that result in focused and coherent communications
X Creative, Critical, and Analytical Thinking	X Uses intellectual curiosity, judgment and analytical decision-making in the acquisition, integration and application of knowledge and skills. X Solves problems utilizing technology, quantitative and qualitative information and mathematical concepts.
X Community/Global Consciousness	X Understands and applies personal concepts of integrity, ethics, self-esteem, lifelong learning, while contributing to the well-being of society and the environment. <input type="checkbox"/> Demonstrates an awareness and respect of the values of diversity, complexity, aesthetics and varied cultural expressions.
X Career and Specialized Knowledge	X Demonstrates knowledge, skills and abilities related to student educational goals, including career, transfer and personal enrichment.
1.4. Check each <u>Educational Master Plan (EMP)/Strategic Plan Goal</u> supported by the program. Type an "X" if checkbox is unavailable.	
<input type="checkbox"/> Goal 1* : Commitment to strengthening institutional effectiveness measures and practices.	

X Goal 2* : Increase efficient and effective use of resources: Technology; Facilities; Human Resources; Business Services.
X Goal 3 : Focus on utilizing proven instructional strategies that will foster transferable intellectual skills.
<input type="checkbox"/> Goal 4* : Advance more students to college-level coursework-Develop and implement effective placement tools.
<input type="checkbox"/> Goal 5 : Align instructional programs to the skills identified by the labor market.

*Indicates College-Wide Priorities for 2019-2020

Part 2.A. Please provide the results of any internal and external environmental scan information you have gathered related to the program e.g. surveys, interviews, focus groups, advisory groups, licensure exam scores, job placement, State mandates, etc.:

Astronomy is a non-CTE discipline. As a result of AB 705, the pre-requisite of MATH 102 has been removed from the course so the number of students available to register for the course has increased. Demand for the course should increase as a result but there have been no additional sections added yet. Evidence for an increase in demand is suggested by full class rosters and waitlists on the first day of class. This had not been the case in past years before the elimination of the pre-requisite. For the upcoming 2021 spring semester, a section of ASTR 101L has been eliminated due to budget issues. There are no other identifiable external factors that appears to be affecting the discipline.

Part 2.B. Analyze the [program review data](#) (please see the program review data retrieval instructions and attach your program review data page with any other supporting documents), the above environmental scan information, and anything else related to your area to identify the program strengths, weaknesses, opportunities, & threats (SWOT):

Strengths	Both lecture and lab course utilize OER (Open Education Resources) which reduces the cost of education for students and hopefully makes our courses more accessible for students. Our retention rates overall remain above average with respect to the rest of the college (~90% vs. ~80%). In 2019-2020, ASTR's success rate was 86.4% vs. AVC's rate of 73.2%. In particular, we have bridged the equity gap for African American/Black students for the first time since 2016-2017. Overall, success rates across all races are at an all-time high.
Weaknesses	The discipline had to recently cut a section of astronomy lab due to budget issues. The number of students taking lab will now drop by 25%. Already lab enrollments and waitlists are filled so demand is still present. Last year, only about 20% of lecture students were able to take lab so now we are not servicing as many students as we could. For lecture, there has been some scheduling issues with the VSL that has not allowed lecture courses to fully utilize the resources there. We lack adjunct faculty in this discipline to support current and any additional sections of lecture in the future.
Opportunities	Prior to the pandemic, the discipline had started to create a relationship with local K-12 schools to bring them to the VSL for educational shows to promote both AVC and science education in general. The hope is that a lasting impact is made with many of these younger students to encourage them to pursue STEM related fields and, in particular, to show them the opportunities that exist at AVC.
Threats	The COVID-19 pandemic has prevented the use of the VSL to support instruction and community outreach. Additionally, budget issues are starting to limit enrollment.

Part 2.C. Review and comment on progress towards SLO/PLO/OO Action Plans:

For ASTR 101, the past couple of years SLO action plans have been geared towards improving the methods of instruction as data showed that a significant number of students were not meeting targets regarding evaluating scientific theories of astronomical systems (SLO #1). The COVID-19

pandemic has accelerated the progress in this area as the discipline has had to scramble to figure out new ways to deliver the same quality of instruction in an online environment. A couple new online resources have been identified and utilized this past academic year to improve student success in the areas of interactive 3D visualizations and simulations of astronomical systems. So far, fall 2019 SLO data has shown a 15% increase in the number of students meeting or exceeding targets in this area.

For ASTR 101L, two major issues stood out in analyzing SLO data for the lab over the last couple of years. The first issue is the lack of appropriate mathematical skills that are utilized in lab. It is possible that AB 705 is responsible for this as now many students are entering this class without demonstrating proficient in MATH 102 (the old pre-requisite). The discipline has revised many lab activities to focus more on reviewing relevant mathematical concepts. In fall 2019 SLO data has shown a 15% increase in the number of students meeting or exceeding targets in this area (SLO #2). The second major issue is with regards to coherence in lab activities across the semester. A formal lab manual is currently in development to improve this.

Part 2.D. Review and comment on progress towards past program review goals:

The past program review listed one goal for the discipline which was to improve student retention and success. As demonstrated in section 2.B of this report, we have seen an improvement in this area. Steps for further improvement have been identified in section 2.C of this report. More robust goals will be developed in this year's report.

Part 3. Based on Part 2 above, please list program/area goals for 2020-2021:

<i>Program/Area Goal #</i>	<i>Goal supports which ILO/PLO/SLO/OO?</i>	<i>Description of Goal</i>	<i>Steps to be taken to achieve goal?</i>
#1 VSL Training	ILO #2; EMP #2, 3; ASTR 101 SLO #1	Faculty will receive additional training on the use of the resources and equipment in the Virtual Science Lab.	Faculty can attend training conferences established by the manufacturers of the VSL equipment (E&S) on their effective use for instruction. Additionally, there are many online training materials that can be studied.
#2 VSL Software	ILO #2; EMP #2; ASTR 101 SLO #1	Upgrade current software used for the VSL, renew current licensing on software, and obtain additional software.	Contact E&S to upgrade current software, renew licensing agreements, and purchase new software.
#3 Lab Manual	ILO #1,4; ASTR 101L SLO #1, 2	Currently, lab activities have individual descriptions and reports and are disjointed. The creation of	Create a lab manual document and provide it to the bookstore for reproduction and use.

		a single document should provide coherence across all activities.	
#4 Enrollment Demands	EMP #2	Hire a part time instructor to meet current and potential future enrollment demands. One full time faculty in this area is not sufficient.	Contact human resources to put out a call for a part time instructor.
#5 Lab Equipment	ILO #1, 2, 4; EMP #2; ASTR 101 SLO #1	Purchase lab equipment to replace current equipment that is aging.	Identify suitable replacement equipment and purchase them.

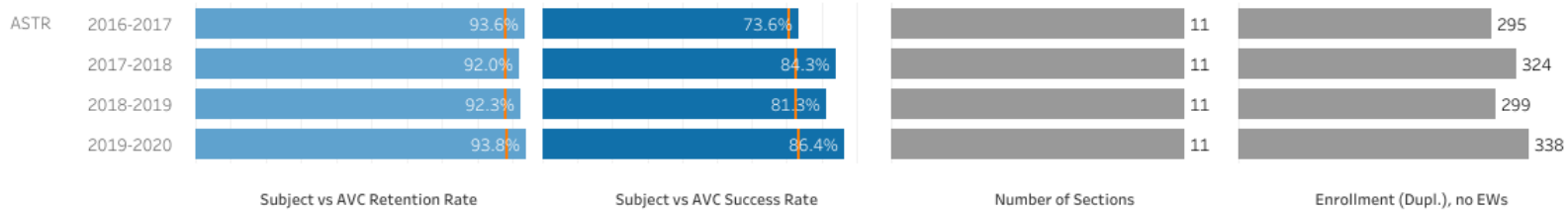
Part 4. Resource Requests that Support Program Needs (Based on above analyses and listed in priority order):

Type of Resource Request	Summary of Request	New or Repeat Request	Amount of Request, \$	One-Time or Recurring Cost, \$	Contact's Name
Faculty	Hire one part-time faculty	Repeat	\$8,000/year?	Recurring	Mark McGovern, Faculty or Alexandra Schroer, Dept Chair or Christos Valiotis, Dean
Classified Staff					
Technology	Purchase new licenses or renew licenses for VSL Software	New	\$20,000	One-time for new software and recurring (every 4 or 5 years) to renew licenses	Mark McGovern, Faculty or Alexandra Schroer, Dept Chair or Christos Valiotis, Dean
Physical/Facilities					
Supplies	Purchase new lab equipment and computers (i.e. telescopes, laptops) to replace currently aging equipment.	New	\$12,000 for laptops; \$5,000 for telescopes	One-time	Mark McGovern, Faculty or Alexandra Schroer, Dept Chair or Christos Valiotis, Dean
Professional Development	Registration and/or travel to attend conferences and access online material for VSL Training	New	\$2,000	One-time	Mark McGovern, Faculty or Alexandra

					Schroer, Dept Chair or Christos Valiotis, Dean
Other					

Part 5. Insert your Program Review Data here, as well as any other supporting data. (See Part 2.B above.)

Retention, Success, Number of Sections, & Enrollment in ASTR (Total AVC rates are shown as | hover over to see data)



Enrollment and Number of Sections by *Modality* in ASTR

	Instr. Method	2016-2017	2017-2018	2018-2019	2019-2020
Number of Sections	Online	1	1	1	2
	Traditional	10	10	10	9
Enrollment	Online	29	42	39	94
	Traditional	266	282	260	250

Enrollment and Number of Sections by *Location* in ASTR

	Location	2016-2017	2017-2018	2018-2019	2019-2020
Number of Sections	Lancaster	11	11	11	11
Enrollment	Lancaster	295	324	299	344

Number of Degrees/Certificates Awarded in None

FTEF by Contract Type, Part-time/Full-time Ratio, FTES, FTES/FTEF in ASTR

	Fall 2016	Fall 2017	Fall 2018	Fall 2019
FT/Regular	0.6	0.8	0.8	0.4
FT/Overload	0.4	0.2	0.2	0.4
TOTAL FTEF	1.0	1.0	1.0	0.8
PT/FT		0.0	0.0	0.0
FTES	15.6	16.2	14.8	14.4
FTES/FTEF Ratio	16.2	16.8	15.3	18.8
WSCH/FTEF Ratio	485.4	503.1	458.7	565.0

Division/Area Name: MSE Division- Biology and Environmental Sciences Department - BIOLOGY	For Years: 2021-2022
Name of person leading this review: Zia Nisani	
Names of all participants in this review: Patricia M. Palavecino, Debra Feickert, Barbara Fredette, Joseph Esdin, Nikki Riley, Rebecca Mille, Lena Coleman, Lauren Conroy	

Part 1. Program Overview:

1.1. Briefly describe how the program contributes to the district <u>mission</u>	
The district's mission is to provide a quality, comprehensive education to a diverse population of learners. This includes various transfer degrees and Transfer/General Education Courses. The biology program continues to meet these goals and increase course offering to facilitate transfer courses and A.S. and A.S-T in biology. Currently biology is the second largest major on campus and in the 2018-2019 cycle we had 39 (AS-BIOLOGY), 31 (AS-T Biology) & 137 (AS- LA in Math & Sciences) degrees granted. Finally, many of our courses are program prerequisites for the Registered Nursing and other allied health programs.	
1.2. State briefly program highlights and accomplishments	
(1) The number of students declaring biology as a major has steadily increased and so has the number of graduates. (2) Thanks to a strong workforce grant, the Biotechnology class has been updated to contain state of the art equipment. (3) Some faculty have actively engaged in scientific research and have mentored undergraduates. This has resulted in students presenting at conferences and publishing papers in peer-reviewed journals. (4) We have increased the number of sections we offer and thus overall enrollment. (5) The Anatomage table has been integrated into our Anatomy classes.	
1.3. Check each <u>Institutional Learning Outcome (ILO)</u> supported by the program. Type an "X" if checkbox is unavailable.	
<input checked="" type="checkbox"/> Communication	<input checked="" type="checkbox"/> Demonstrates analytical reading and writing skills including research, quantitative and qualitative evaluation and synthesis. <input checked="" type="checkbox"/> Demonstrates listening and speaking skills that result in focused and coherent communications
<input checked="" type="checkbox"/> Creative, Critical, and Analytical Thinking	<input checked="" type="checkbox"/> Uses intellectual curiosity, judgment and analytical decision-making in the acquisition, integration and application of knowledge and skills. <input checked="" type="checkbox"/> Solves problems utilizing technology, quantitative and qualitative information and mathematical concepts.
<input checked="" type="checkbox"/> Community/Global Consciousness	<input checked="" type="checkbox"/> Understands and applies personal concepts of integrity, ethics, self-esteem, lifelong learning, while contributing to the well-being of society and the environment.

	<input checked="" type="checkbox"/> Demonstrates an awareness and respect of the values of diversity, complexity, aesthetics and varied cultural expressions.
<input checked="" type="checkbox"/> Career and Specialized Knowledge	<input checked="" type="checkbox"/> Demonstrates knowledge, skills and abilities related to student educational goals, including career, transfer and personal enrichment.
1.4. Check each <u>Educational Master Plan (EMP)/Strategic Plan Goal</u> supported by the program. Type an "X" if checkbox is unavailable.	
<input checked="" type="checkbox"/> Goal 1*: Commitment to strengthening institutional effectiveness measures and practices.	
<input checked="" type="checkbox"/> Goal 2*: Increase efficient and effective use of resources: Technology; Facilities; Human Resources; Business Services.	
<input checked="" type="checkbox"/> Goal 3: Focus on utilizing proven instructional strategies that will foster transferable intellectual skills.	
<input type="checkbox"/> Goal 4*: Advance more students to college-level coursework-Develop and implement effective placement tools.	
<input type="checkbox"/> Goal 5: Align instructional programs to the skills identified by the labor market.	

*Indicates College-Wide Priorities for 2019-2020

Part 2.A. Please provide the results of any internal and external environmental scan information you have gathered related to the program e.g. surveys, interviews, focus groups, advisory groups, licensure exam scores, job placement, State mandates, etc.:

Biology degree programs do not have external environmental scans. As for the internal scans, we primarily depend on our PLOs. With our last analysis of PLO 1, "Demonstrate a practical working knowledge of the scientific method, and the ability to collect, evaluate, and analyze scientific data," 77.59% of the students met or exceeded the target. We continue to develop more hands-on, inquiry-based labs and activities to further develop students' scientific skills. As a department, we will be conducting and attending workshops to develop more hands-on, inquiry-based laboratory activities. Finally, developing course-based undergraduate research (CURE) and summer research projects for our students is a major priority of the department, as we believe that undergraduate research strengthens written and oral communication, critical thinking, technical skills, and information literacy.

Part 2.B. Analyze the program review data (please see the program review data retrieval instructions and attach your program review data page with any other supporting documents), the above environmental scan information, and anything else related to your area to identify the program strengths, weaknesses, opportunities, & threats (SWOT):

Strengths	Our success rates have increased by 5.7% to 68.6%, which is below the AVC 72.3% success rate but showing signs on increasing. However, this can be attributed to the rigor of our science courses. Our retention rate is around 87.4% which is about a 6.2% increase from last year. Meeting the needs of minority students was identified in last year's program review as a target for improvement. When success rate is broken down by race/ethnicity, African American and Hispanics both increased by about 5.2% and 6.8% respectively. Looking at trends since 2014, other ethnic groups tend to be on par with the AVC overall success rate, even given the difficult nature of the subject. Improvements such as these are therefore critical in bringing biology closer to the overall AVC success rate. The academic year 2018-2019 had a 54% increase in the number of AS-T Biology degrees, with 43 degrees in 2018-2019 versus 28 in 2017-2018. The number of Biological Science degrees awarded also increased by 53% from last year. In 2019-2020 we had 39 (AS-BIOLOGY), 31 (AS-T Biology) which is slight drop, but in-line with the cyclical pattern of graduations. Our unduplicated headcount (N =3297) for 2019-2020 is up by 153 students from 2018-2019 which was 98 students
------------------	--

	<p>more than the previous year. This growth trend has been happening since 2015. Since 2016-2017 we have added 14 sections at the Lancaster campus and 13 sections in Palmdale. That is why Biology continues to be one of the major contributors to both campuses' FTES and our program is continuing to grow and graduate more students.</p>
Weaknesses	<p>While success rates improved for Hispanics and African Americans, both groups are below the AVC overall rate. For groups like White and Other, there were increases in success rates of 8.1% and 4.1%, respectively; however, we continue to meet the target set by district. These data indicate that maintaining a target on Hispanic (the largest student demographic) and African Americans can bring the biology success rate much closer to the AVC overall success rate. Students identifying as two or more races also showed a modest increase of 1.1% in success rate (67.3%). With the hiring of new faculty and the updates to programs, biology faculty seek to improve the program and address the needs of our diverse student population. The Department will continue to discuss ways to further close this equity gap. Having a dedicated STEM adviser and counselor will be of great help in meeting our goals and closing the gap. The differences between males and females, when it came to success rates, were not significantly different.</p> <p>Last fall, Introduction to Botany (BIO 103) underwent a substantial upgrade in its lecture and laboratory classes. The faculty in charge of Botany introduced relevant new materials for the laboratory part. Also, the use of optical instruments increased during laboratory classes. Unfortunately, due to the pandemic's interruption, some of the goals set in place during the last Program Review for BIO 103 have slowed down or stopped momentarily. We expect to resume pursuing them when things return to normal. Meanwhile, it is still possible to work toward offering a hybrid Botany course in the future and incorporate this modality into our regular schedule of classes. Besides, with the extension of our Summer intersession, the possibility to offer/introduce Introduction to Botany in our summer schedule starting in 2022 will be analyzed.</p> <p>With the newly implemented changes in the laboratory portion of BIO 103, it became clear the need for microscopes (compound and stereomicroscopes). Compound microscopes are required in 12 out of the 14 laboratory exercises scheduled during the semester plus during the two laboratory exams. Stereomicroscopes are required in 6 out of the 14 laboratory exercises plus the two laboratory exams. To solve the urgent need of microscopes during fall 2019, the Biology department provided maintenance service to some (around 20) out-of-use compound microscopes that were stored in the bio preparation room at the science building. Regarding the stereomicroscopes, we are currently borrowing those microscopes from Anatomy/Physiology. Because the Botany class takes place outside of the Science Building, specifically in the TE3 building, those microscopes are transported back and forth from one building to the other any time they are needed.</p>
Opportunities	<p>In the past few years there have been a number of students participating in undergraduate research (UR) that has resulted in them presenting at scientific conferences and publishing in peer review journals. As more faculty get involved in this endeavor, more students can benefit from this. Thanks to the STEM grant, we have joined the Counsel of Undergraduate Research (CUR) which allows us to explore resources in order to further develop UR in the Biology program. The goal is to have many Course-Based Undergraduate Research Experience courses where research is embedded in our majors courses. Also, we are exploring opportunities to develop summer micro-internship research opportunities.</p>

	<p>Thanks to grants (such as strong workforce) we have been able to purchase high tech scientific equipment that our majors' students (especially in biotechnology) can use and get hands on experience.</p> <p>In order to best serve our biology majors, the cell and molecular biology class (Biol 110) needs updating. There is a need to understand the technology that drives the field of cell and molecular biology. This same technology should also be used in updating our general microbiology class (Bio 204). While our current microbiology classes teach methods that have been mainstays in traditional microbiology labs, these methods do not reflect what currently is being used in research, academic, and high-end clinical laboratories across the globe. The field of microbiology has increasingly become molecular when it comes to diagnostic testing, and microbial identification has gone from a 2-day affair to as little as 6 hours. If we want to teach our students current techniques that will equip them with the skills necessary to navigate through upper division university classes and skills that they can build upon for the job market, then new lab equipment is a necessary addition.</p> <p>Regarding Introduction to Botany, there is a potential for growth as more students may see BIO 103 as an excellent alternative science course for their general education requirements or for those who have an interest in pursuing a degree in the plant science field. This belief is based on an informal survey given at the beginning of each semester in the Biol 103 sections, which has been completed by all of the registered Biol 103 students in the fall 2019 and spring 2020 semesters. The retention rate is between 82% to 90%, and the passing rate was around 64% (Fall 2019 data). It is still low, and we expect this number to increase. There is no SLO data about passing rate for previous years.</p> <p>Another window for future growth is the possibility to add a hybrid section (online lecture/face2face laboratory), which will open the opportunity to students who live far from campus to take the course and come only once a week to campus for lab.</p> <p>We have some equipment, such as sable System respirometer, on which the faculty need training. This will help with developing more meaningful and hands-on inquiry-based labs for biology majors.</p>
<p>Threats</p>	<p>The biggest threat we face is lack of lab space and personnel. The demand is going up but we are not able to meet it. For example, with the new lab in the Palmdale center we can offer more biology classes, but we don't have the personnel to do so. Furthermore, due to retirements and adjuncts leaving, this year we really struggled with assigning instructors to classes. Many adjuncts were over-loaded to meet demand (sometimes up to 6 adjuncts/semester). Even though we recently hired 2 FT faculty, those only help fill in vacancies due to retirements. This not only hampers our efforts to meet demands, but also increasing our class offerings. We hope future hires will help remedy this problem.</p> <p>Not having new, well maintained optical instruments of its own (compound and stereomicroscopes), can completely jeopardize 90% of the Botany laboratory content that deal with microscopy and macroscopy structure of plants, as it would happen with any of our other Biology courses. Currently, Botany has available around 16 recycled compound microscopes and zero stereomicroscopes. There is a real need for a minimum of 12 new compound microscopes and 12 stereomicroscopes. Microscopes are also being used for another course (Pest Control) in the Agricultural/Landscape program.</p> <p>The classroom TE3-111 is also in need of a computer/projector update system.</p> <p>Finally, the proposed and tentatively published Academic Calendar will cause a reduction in overall biology courses offered during summer. Furthermore, the proposed 12-week and 6-week summer block schedule with 4-hour and 2-hour lab block-times</p>

respectively, will make it very difficult to offer biology labs that are written and developed for 3 hours. This means that the faculty must completely change the lab manual, set up protocol, etc. Pedagogically, it makes no sense. Nationwide, biology labs are meant to be three hours and having 4-h or 2-h labs, makes no sense. This reduction in sections, will ultimately hurt students.

Part 2.C. Review and comment on progress towards SLO/PLO/OO Action Plans:

Overall, all of our courses (Biol 100, 101, 101L, 104, 110, 120, 201, 202 and 204) meet or exceeded the set mastery level for the majority of SLOs. However, the push is to continue to increase our success and develop more meaningful (hands-on) labs and activities. Biol 120 continues to lead in the area of course-based undergraduate research, and students continue to conduct and, in some cases, publish their results. Biology 101 and 101L satisfy general education requirements for many university programs and is a prerequisite to the nursing program at AVC. For 101 lectures SLO 1 and SLO 2 were above the target of 70%, at 74% and 72%, respectively. In 101 Lab, both SLO1 and SLO2 meet the 70% target, at 77% and 80% respectively. In efforts to increase student performance, two new full-time faculty now coordinate 101 with goals of improving updating the 101 lab manual and creating hands-on, active learning lab projects. In the future, purchase of new lab materials may be required to implement this update. The Anatomy and Physiology labs (Biol 201 & 202) continue to meet the set targets. However, the Anatomy lab is heavily used with 16-20 classes/week in both fall and spring semesters and additional classes offered during the summer. Because of the constant wear and tear, replacement/new models are necessary for Anatomy lab exercises. As for Biol 202, many of the laboratory course objectives listed in the Biol 202 Course Outline of Record (COR) require the use of recording instrumentation, which includes electronic stimulation units, computers, analogue-to-digital converters, transducers and cable connectors. The latest equipment purchase was in 2011, and much of this equipment is no longer functioning. Partial replacement of equipment is not possible as new equipment is not compatible with most of the obsolete equipment that is currently in use.

Part 2.D. Review and comment on progress towards past program review goals:

Goal 1) Reform instructional methodology to include Inquiry-based learning. We are continuing to develop more inquiry-based hands on labs in our majors classes. We are talking about doing so in our non-majors classes also.

Goal 2) Improvement of student learning outcomes. The grade distribution in biology classes tends to follow a normal distribution curve. This suggests that we do not have any grade inflation going on. As mentioned previously, the success rate is lower than AVC rates. With the virtual anatomy room being more accessible, we project further improvement in Anatomy students.

Goal 3) Develop an undergraduate research (UR) program. A few faculty members 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. Recently, we had one paper published and students presenting their work at a conference. Also, we have ongoing projects that involve students doing research. Biology 120 classes continue to promote UR as part of the class curriculum.

Part 3. Based on Part 2 above, please list program/area goals for 2020-2021:

<i>Program/Area Goal #</i>	<i>Goal supports which ILO/PLO/SLO/OO?</i>	<i>Description of Goal</i>	<i>Steps to be taken to achieve goal?</i>
Reform instructional methodology to include Inquiry-based learning.	ILOs 1,2 & 3 PLOs 1 & 5	Instituting inquiry-based learning in more courses.	Having workshops on developing hands-on lab activities and

			rewriting lab manuals. Sharing literature on how to develop more inquiry-based labs. Finally, by purchasing more supplies and equipment we can develop more hands-on labs for students (this last part also applies to goal 2).
Improvement of student learning outcomes.	ILOs 1,2 & 3 PLOs 1-5	Increase student success rates.	Trying to develop way to identify students that are struggling earlier in the semester and referring them to proper services. Developing review workshops that students can attend when struggling.
Develop an undergraduate research (UR) Program.	ILOs 2 & 3 PLOs 1 & 5	Increasing faculty participation in mentoring student research.	A group of us are reading literature and attending UR conferences in order to get ideas on how to implement a permanent UR program on campus.

Part 4. Resource Requests that Support Program Needs (Based on above analyses and listed in priority order):

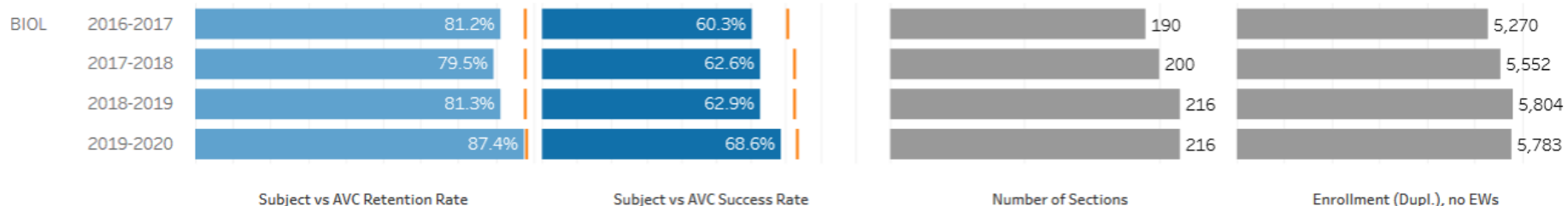
Type of Resource Request	Summary of Request	New or Repeat Request	Amount of Request, \$	One-Time or Recurring Cost, \$	Contact's Name
Faculty	Fulltime Faculty	New	\$100,000	Recurring	Zia Nisani
Classified Staff					
Technology	6 - 15-inch Apple MacBook	Repeat	\$14,394	One-time	Barbara Fredette
	6 – Apple Mac USB-C multiport converters	Repeat	\$414	One-time	Barbara Fredette
	6 – AD Instruments PowerLab 15T units	Repeat	\$9,570	One time	Barbara Fredette
	6 – AD Instruments LabChart 8 software	Repeat	\$8,970	One-time	Barbara Fredette
	6 – AD Instruments Physiology Kits	Repeat	\$2,220	One-time	Barbara Fredette
	6 – AD Instruments Reusable ECG Electrodes	Repeat	\$633	One-time	Barbara Fredette

	Vernier O2-BTA O2 gas sensor Am/Scope H800-96S AF-1 Inspection HD camera Two Elmo MO-1 Visual Presenters 24 - 8 th generation iPads to replace obsolete 2 nd generation iPads	Repeat Repeat Repeat New	\$200 \$1,090 \$918 \$7,896	One-time One-time One-time One-time	Barbara Fredette Barbara Fredette Barbara Fredette Debra Feickert
Physical/Facilities	To complete the final phase of the Anatomage Lab: 2 narrow-bezel 60” LCD TVs mounted side-by-side above the white boards in UH 127. The installation of this equipment can be done in-house.	Repeat	\$10,880.10	One-time	Bill Carlson
Supplies	Cadaver replacement for current female cadaver 813023 Somso Kidney Structures (replacement) 813199 3D Female Pelvis (replacement) 811173 3D Male Pelvis (replacement) 823613 (2) Male Skulls (replacement) 823613 (2) Female Skulls (replacement) 813148 Visible Muscle System, desktop (new) 813810 3D Pregnancy Model Set (new)	New Repeat Repeat Repeat Repeat Repeat Repeat	\$3,400 \$680 \$215 \$215 \$600 \$580 \$660 \$925	Recurring One-time One-time One-time One-time One-time One-time	Barbara Fredette Jenna Jacobson Jenna Jacobson Jenna Jacobson Jenna Jacobson Jenna Jacobson Jenna Jacobson Jenna Jacobson

	814010 Somso Cavities of the Nose/Mouth (new)	Repeat	\$655	One-time	Jenna Jacobson
	676835 Rat Anatomy Museum Mount (new)	Repeat	\$450	One-time	Jenna Jacobson
	KO-191-006 (2) R & L Palatine Bone Clones (new)	Repeat	\$58	One-time	Jenna Jacobson
	KO-191-008 (2) R & L Zygomatic Bone Clones (new)	Repeat	\$40	One-time	Jenna Jacobson
	KO-191-004 (2) R & L Inferior Nasal Conchae Bone Clones (new)	Repeat	\$40	One-time	Jenna Jacobson
	H-01-F Articulated hand female left Bone Clones	Repeat	\$195	One-time	Jenna Jacobson
	F-04-M Disarticulated foot male left Bone Clones	New	\$150	One-time	Jenna Jacobson
Professional Development					
Other					

Part 5. Insert your Program Review Data here, as well as any other supporting data. (See Part 2.B above.)

Retention, Success, Number of Sections, & Enrollment in BIOL (Total AVC rates are shown as | hover over to see data)



Enrollment and Number of Sections by **Modality** in BIOL

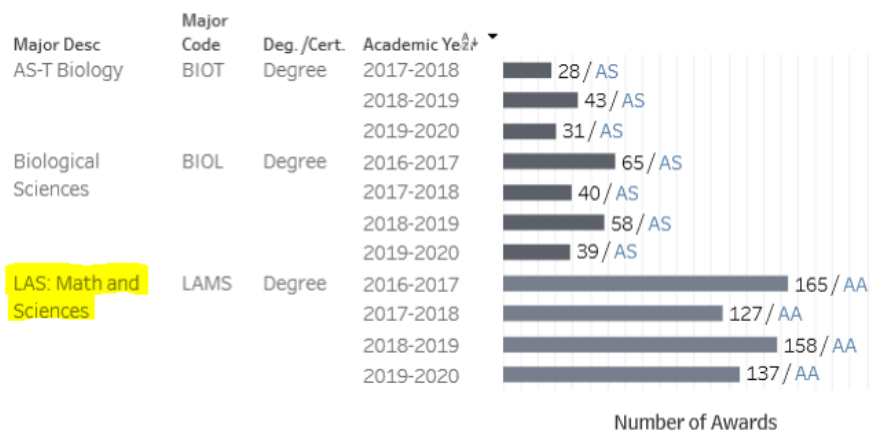
	Instr. Method	2016-2017	2017-2018	2018-2019	2019-2020
Number of Sections	Online	12	17	17	21
	Other Indep S..			1	
	Traditional	178	183	198	195
Enrollment	Online	372	501	511	668
	Other Indep S..			5	
	Traditional	4,898	5,051	5,290	5,340

Enrollment and Number of Sections by **Location** in BIOL

	Location	2016-2017	2017-2018	2018-2019	2019-2020
Number of Sections	Lancaster	184	192	199	198
	Palmdale	6	8	17	18
Enrollment	Lancaster	5,069	5,344	5,418	5,564
	Palmdale	201	208	388	444

Number of Degrees/Certificates Awarded in AS-T Biology (BIOT), Biological Sciences (BIOL), LAS: Math and Sciences (LAMS)

FTEF by Contract Type, Part-time/Full-time Ratio, FTES, FTES/FTEF in **BIOL**

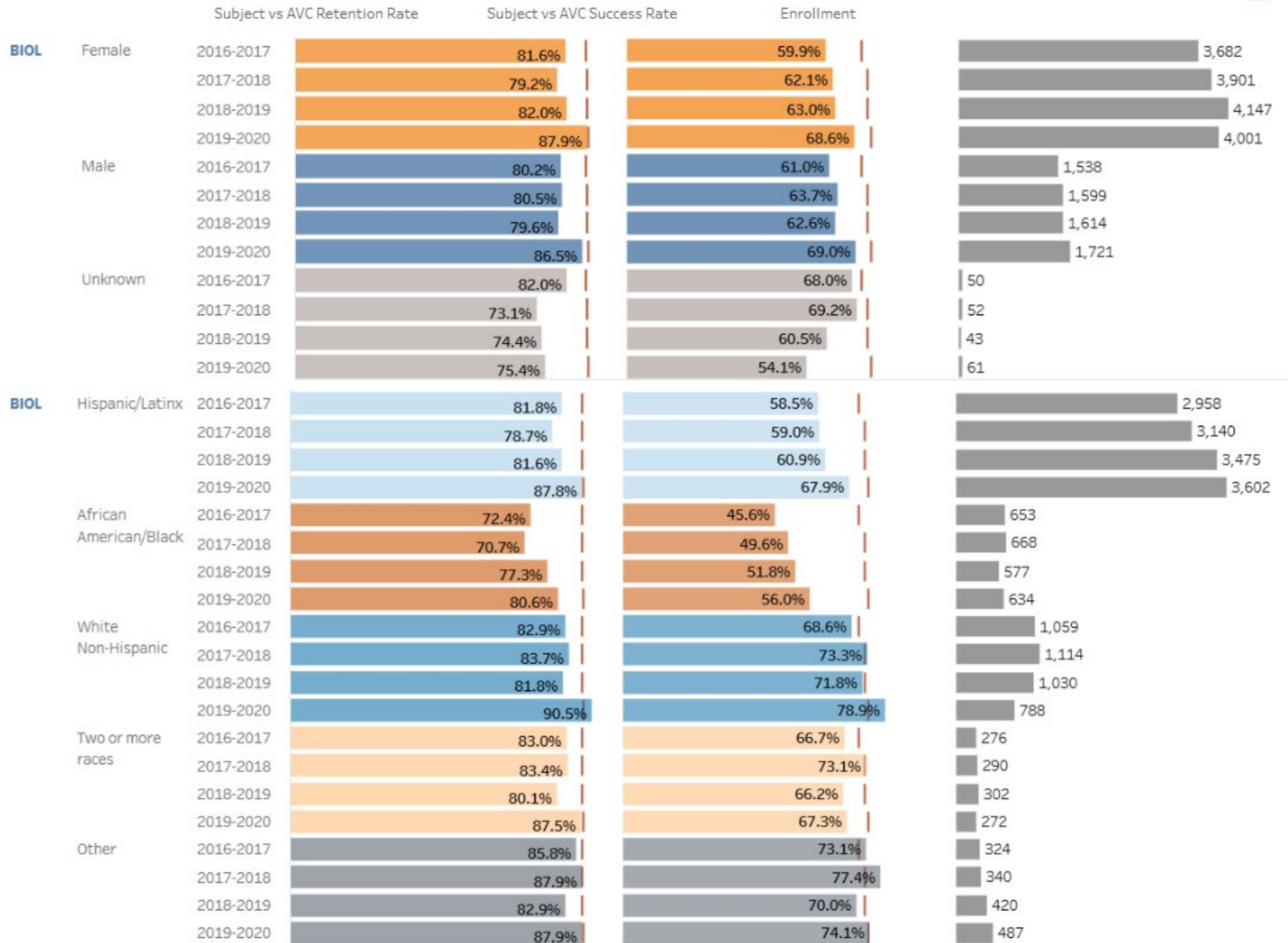


	Fall 2016	Fall 2017	Fall 2018	Fall 2019
PT/Adjunct	8.0	7.3	8.8	8.4
FT/Regular	12.0	13.7	13.5	12.4
FT/Overload	3.1	2.9	3.3	3.7
TOTAL FTEF	23.2	23.9	25.7	24.5
PT/FT	0.7	0.5	0.7	0.7
FTES	341.3	345.4	359.6	344.3
FTES/FTEF Ratio	14.7	14.4	14.0	14.1
WSCH/FTEF Ratio	441.4	433.0	420.3	422.1

Click [here](#) to see AVC's Program awards dashboard

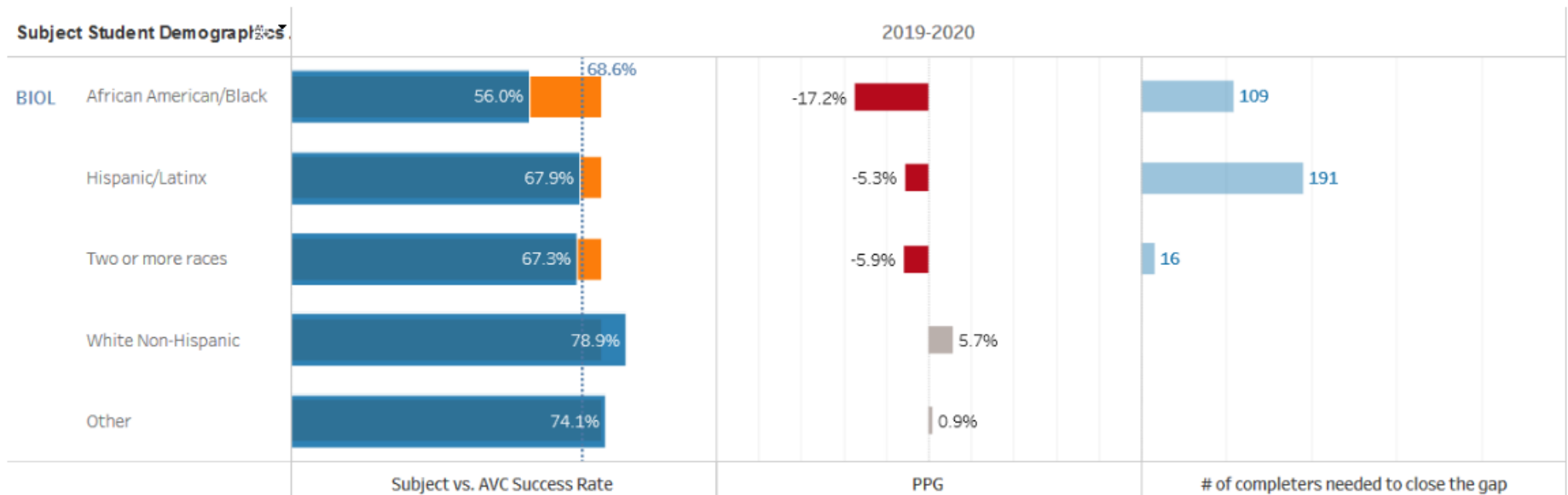
***The students earning the LAS: Math & Sciences tend to take many biology courses and such, their graduation rate is included here.**

Subject-Level Retention, Success, and Enrollment by Gender & Race/Ethnicity as Compared to AVC's Rates (I)



2019-2020 Disproportionate Impact as Percentage Point Gap (PPG)

Blue Bars show Success Rate (SR) within the sub-Groups vs. AVC Annual SR (orange bar) vs. BIOL Annual SR (dotted line)



In 2019-2020, BIOL's Success Rate was 68.6% vs. AVC's Annual rate of 73.2%

Overall Disproportionate Impact as percentage point gap was : -4.6%

In BIOL, 5,783 was the enrollment count (duplicated headcount) (only shows if $n > 10$)

If there is a Disproportionate impact (PPG is negative), multiply the absolute value of PPG by the number of students and divide it by 100 to determine how many more successful completers would eliminate the gap.

(For example, $(5,783 * |-4.6\%|)=266$. it means that 266 more successful course completers would help close the gap for this subject area)

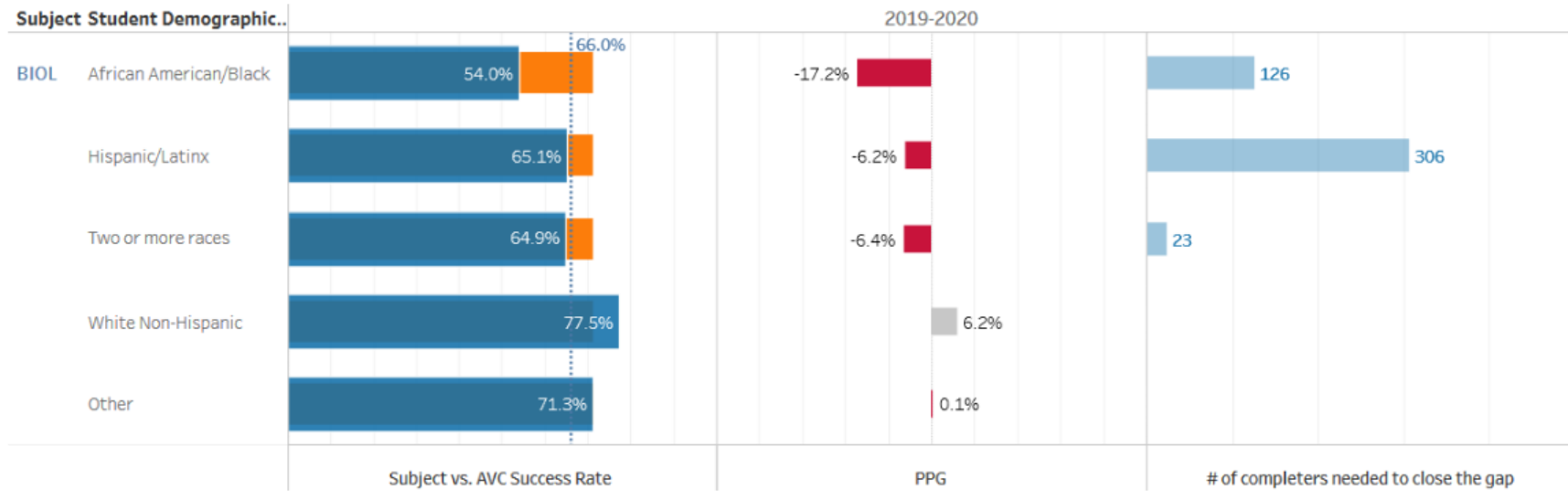
(Hover over each bar in the chart to see details about each sub-group)

With EW

Click to Exclude EWs

2019-2020 Disproportionate Impact as Percentage Point Gap (PPG)

Blue Bars show Success Rate (SR) within the sub-Groups vs. AVC Annual SR (orange bar) vs. BIOL Annual SR (dotted line)



In 2019-2020, BIOL's Success Rate was 66.0% vs. AVC's Annual rate of 71.3%

Overall Disproportionate Impact as percentage point gap was -5.2%

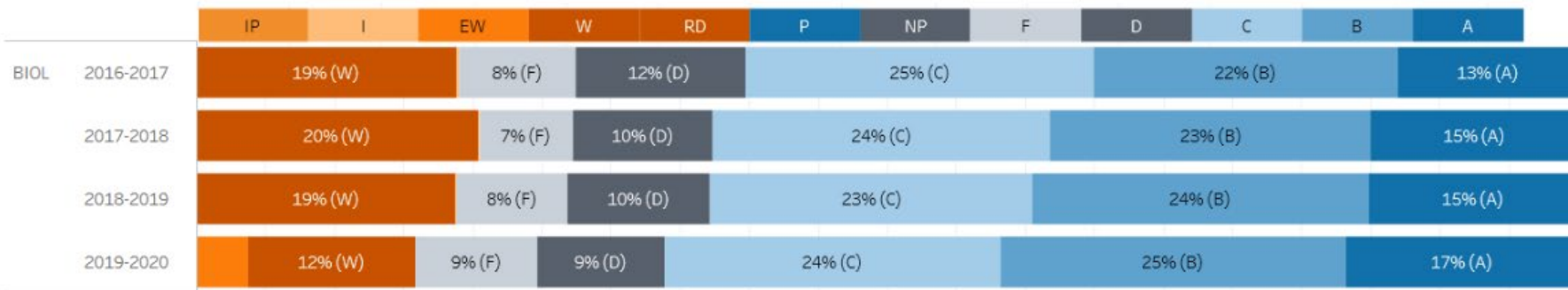
In BIOL, 6,008 was the enrollment count (duplicated headcount) (only shows if $n > 10$)

If there is a Disproportionate impact (PPG is negative), multiply the absolute value of PPG by the number of students and divide it by 100 to determine how many more successful completers would eliminate the gap.

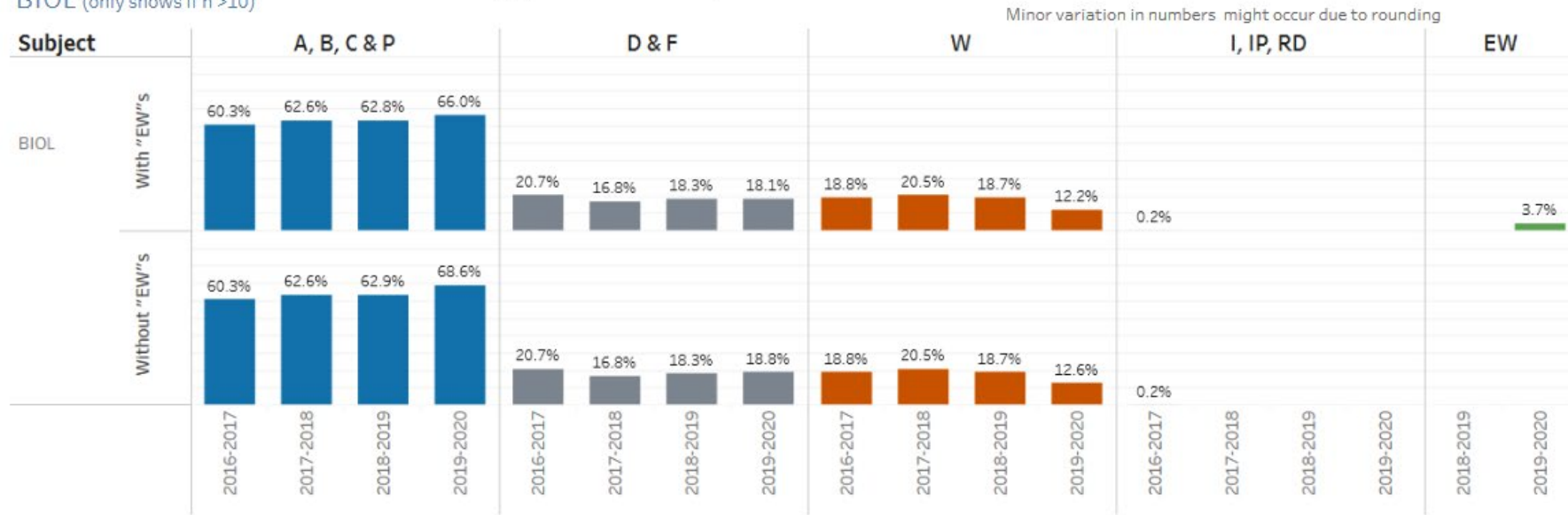
(For example, $(6,008 * |-5.2\%|) = 431$. it means that 431 more successful course completers would help close the gap for this subject area)

(Hover over each bar in the chart to see details about each sub-group)

Grade Distribution for BIOL based on all enrolled students, including those who received "EW"s during Spring 2020



BIOL (only shows if n >10)
 SELECT Subject again
 BIOL



FTEF by Contract Type, Part-time/Full-time Ratio, FTES, FTES/FTEF in **BIOL**

	Fall 2016	Fall 2017	Fall 2018	Fall 2019
PT/Adjunct	8.0	7.3	8.8	8.4
FT/Regular	12.0	13.7	13.5	12.4
FT/Overload	3.1	2.9	3.3	3.7
TOTAL FTEF	23.2	23.9	25.7	24.5
PT/FT	0.7	0.5	0.7	0.7
FTES	341.3	345.4	359.6	344.3
FTES/FTEF Ratio	14.7	14.4	14.0	14.1
WSCH/FTEF Ratio	441.4	433.0	420.3	422.1

Full Time Equivalent Faculty (FTEF) by Contract Type (Part-Time, Full-Time, FT/Overload) and by Term
(FTEF = LHE/15)

(The calculations exclude reassigned time)

	2016-2017						2017-2018						2018-2019						2019-2020					
	Fall 2016			Spring 2017			Fall 2017			Spring 2018			Fall 2018			Spring 2019			Fall 2019			Spring 2020		
	PT/Adj..	FT/Reg..	FT/Ove..	PT/Adj..	FT/Reg..	FT/Ove..	PT/Adj..	FT/Re..	FT/Ove..	PT/Adj..	FT/Reg..	FT/Ov..	PT/Adj..	FT/Reg..	FT/Ove..	PT/Adj..	FT/Re..	FT/Ove..	PT/Adj..	FT/Reg..	FT/Ove..	PT/Adj..	FT/Reg..	FT/Ove..
BIOL	8.0	12.0	3.1	7.2	12.3	2.8	7.3	13.7	2.9	7.8	13.3	2.5	9.2	13.5	3.3	8.8	12.2	3.3	8.4	12.4	3.7	8.4	11.4	4.4
Grand ..	8.0	12.0	3.1	7.2	12.3	2.8	7.3	13.7	2.9	7.8	13.3	2.5	9.2	13.5	3.3	8.8	12.2	3.3	8.4	12.4	3.7	8.4	11.4	4.4

Annualized FTEF by Contract Type (Part-Time, Full-Time, FT/Overload, Total) in Major Terms.
[(Fall LHE + Spring LHE)/30]

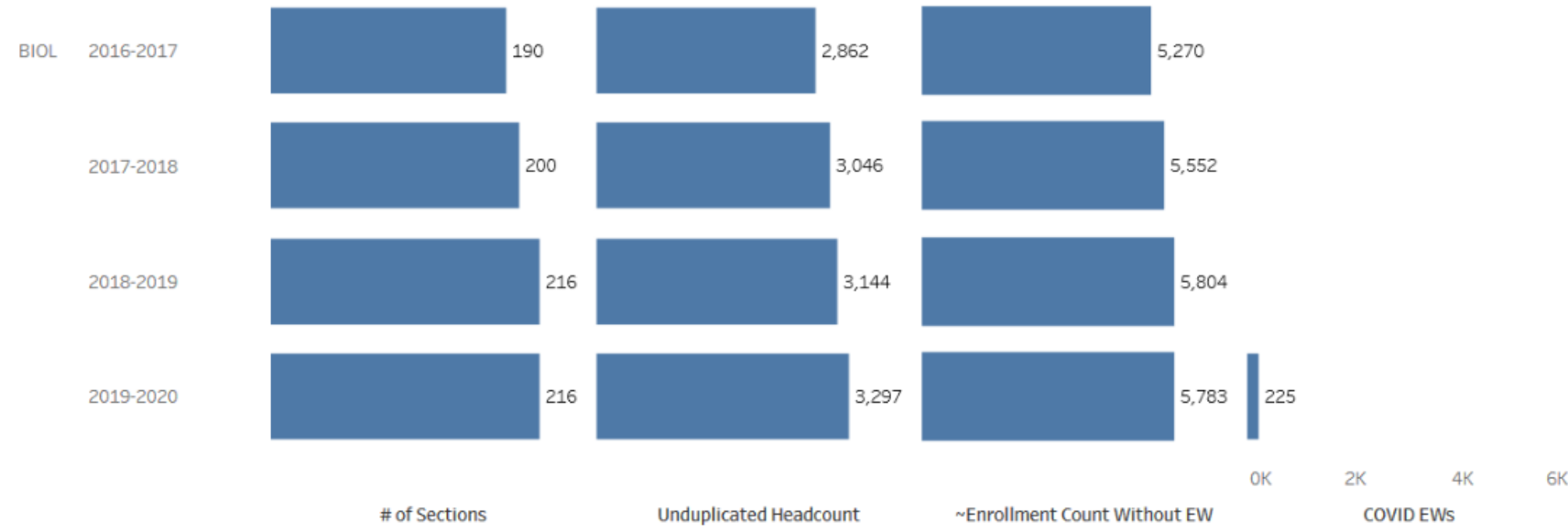
	2016-2017				2017-2018				2018-2019				2019-2020			
	PT/Adjun..	FT/Regul..	FT/Overl..	Total	PT/Adjun..	FT/Regul..	FT/Overl..	Total	PT/Adjun..	FT/Regul..	FT/Overl..	Total	PT/Adjun..	FT/Regul..	FT/Overl..	Total
BIOL	7.6	12.2	3.0	22.7	7.6	13.5	2.7	23.8	9.0	12.8	3.3	25.2	8.4	11.9	4.0	24.4
Grand Total	7.6	12.2	3.0	22.7	7.6	13.5	2.7	23.8	9.0	12.8	3.3	25.2	8.4	11.9	4.0	24.4

Success (and Enrollment) Numbers in Subject(s) BIOL by Academic Year (Hover over the numbers for Retention)

	2016-2017	2017-2018	2018-2019	2019-2020	Grand Total
BIOL	60.3% (5,270)	62.6% (5,552)	62.9% (5,804)	68.6% (5,783)	63.7% (22,409)
Grand Total	60.3% (5,270)	62.6% (5,552)	62.9% (5,804)	68.6% (5,783)	63.7% (22,409)

Enrollment, Number of Sections by Course Number

Annual or Term: Term: Select a Course Number:



Division/Area Name: MSE Division-Chemistry Department - CHEMISTRY	For Years: 2021-2022
Name of person leading this review: Dr. D. Newman	
Names of all participants in this review: Dr. Jessica Harper, Dr. David Newman, Dr. Alexandra Schroer, Carlos Hernandez, Dr. J Cooper, (Maria Groth in March 2020) Met March 2020 and Oct 2020	

Part 1. Program Overview:

1.1. Briefly describe how the program contributes to the district mission	
Chemistry is in the top 6 in the percentage of all AVC's FTES (3.1% in 2017-2018 as compared to 2.8% in 2013-2014). The number of FTES in 2018-19 was 326. Chemistry classes are part of the AS-T Chemistry, LAS-Math and Sciences, and Physical Sciences degrees. Chemistry is a prerequisite for various biology courses, kinetics courses and the nursing program.	
1.2. State briefly program highlights and accomplishments	
<p>--increased success of all students, especially success of AA/black students from -17% (2016) to -9.2% (2020).</p> <p>--females have made even greater gains in success (from 66% (2016) to 73% (2019) with slight drop to 70% (2020)), and males from (68% (2016) to 75% (2020))</p> <p>--degree completion doubled—AS-T chemistry degrees increased from 16 (2018) to 31(2019); decreased in 2020 due to COVID</p> <p>--enrollment is holding steady, although there were more course offerings; however, we are concerned about summer 2021.</p> <p>--we're on par with AVC success (72.1% CHEM; 73.2% AVC) and retention (85.7% CHEM; 87.9%AVC)</p> <p>--faculty were trained on HPLC instrument (high performance liquid chromatography)</p> <p>--various classes were regularly using the laboratory instrumentation that has been purchased over the past few years. NMR, IR, UV, GC/MS, polarimeter</p> <p>--PT/FT ratio slightly increased to 1.1; FT overload grew from 1.7 (2017) to 2.6 (2019). PT increased 4.3 to 4.5 FT decreased 4.7 to 4.5. This information supported the process of hiring a new FT chemistry teacher.</p>	
1.3. Check each Institutional Learning Outcome (ILO) supported by the program. Type an "X" if checkbox is unavailable.	
<input checked="" type="checkbox"/> X Communication	<p>X Demonstrates analytical reading and writing skills including research, quantitative and qualitative evaluation and synthesis.</p> <p>X Demonstrates listening and speaking skills that result in focused and coherent communications</p>
<input checked="" type="checkbox"/> X Creative, Critical, and Analytical Thinking	<p>X Uses intellectual curiosity, judgment and analytical decision-making in the acquisition, integration and application of knowledge and skills.</p> <p>X Solves problems utilizing technology, quantitative and qualitative information and mathematical concepts.</p>
<input type="checkbox"/> Community/Global Consciousness	<p>X <input type="checkbox"/> Understands and applies personal concepts of integrity, ethics, self-esteem, lifelong learning, while contributing to the well-being of society and the environment.</p>

	Demonstrates an awareness and respect of the values of diversity, complexity, aesthetics and varied cultural expressions.
<input checked="" type="checkbox"/> Career and Specialized Knowledge	x Demonstrates knowledge, skills and abilities related to student educational goals, including career, transfer and personal enrichment.
1.4. Check each <u>Educational Master Plan (EMP)/Strategic Plan Goal</u> supported by the program. Type an "X" if checkbox is unavailable.	
<input checked="" type="checkbox"/> Goal 1* : Commitment to strengthening institutional effectiveness measures and practices.	
<input checked="" type="checkbox"/> Goal 2* : Increase efficient and effective use of resources: Technology; Facilities; Human Resources; Business Services.	
<input checked="" type="checkbox"/> Goal 3* : Focus on utilizing proven instructional strategies that will foster transferable intellectual skills.	
<input checked="" type="checkbox"/> Goal 4* : Advance more students to college-level coursework-Develop and implement effective placement tools.	
<input checked="" type="checkbox"/> Goal 5* : Align instructional programs to the skills identified by the labor market.	

*Indicates College-Wide Priorities for 2019-2020

Part 2.A. Please provide the results of any internal and external environmental scan information you have gathered related to the program e.g. surveys, interviews, focus groups, advisory groups, licensure exam scores, job placement, State mandates, etc.:

- CHEM 120 regularly matches the national average on American Chemical Society tests for general chemistry.
- COVID survey results indicated that majority of students preferred the synchronous method of instruction when no face-to-face was available.
- A survey in general chemistry in fall 2019 indicated that the majority of students preferred submitting homework on paper rather than online. Conversely, they preferred using a free online book rather than purchasing a hardcopy textbook.

Part 2.B. Analyze the program review data (please see the program review data retrieval instructions and attach your program review data page with any other supporting documents), the above environmental scan information, and anything else related to your area to identify the program strengths, weaknesses, opportunities, & threats (SWOT):

Strengths	increased success of all students, especially success of AA/black students from -17% to -9%. -- females have made even greater gains in success (from 66% (2016) to 73% (2019) with slight drop to 70% (2020)), and males from (68% (2016) to 75% (2020)) --Degree completion increased from 16 (in 2018) to 31 (in 2019); there was a drop back to 19 in 2020. Presumably due to COVID and lack of graduation ceremony. --there is a lab full of research grade instrumentation available for student experience and research.
Weaknesses	enrollment is holding steady, although there were more course offerings. Summer 2021 is a concern. The LHE from Intersession 2021 is unlikely to be made up during summer, particularly because those intersession teachers will not be able to teach more than 10 LHE in summer.
Opportunities	– PT/FT ratio increased slightly to 1.1

	<ul style="list-style-type: none"> – FT overload grew from 1.9 to 2.6. – PT increased 4.3 to 4.7
Threats	<ul style="list-style-type: none"> – Coronavirus – on-line labs (particularly for students progressing through the chem sequence), – lack of hands-on lab experience leading to unpreparedness for research upon transfer, – decreased math skills; the math requirement for CHEM 120 was reduced to Math 102. Because this course requires familiarity with logarithms, using the quadratic equation, and graphing, valuable class time is being wasted in review and reminding students to take advantage of the math resources at the Learning Center; – eliminated intersession and changed summer schedule will impact offerings of majors-level courses –6 weeks is too short, 12 weeks still requires odd revisions to lab schedule and not enough teachers available at that time.

Part 2.C. Review and comment on progress towards SLO/PLO/OO Action Plans:

- SLOs were all reworked to be broader, were approved in Curricunet by AP&P, but are still not updated in eLumen.
- Since spring 2020, because of the COVID-19 pandemic, there has been no in person instruction in the lab, limiting students proper access to equipment and lab experiments. This could explain the discrepancy between fall 2019 were the SLO was met by 58% of students and spring 2020 were 91.5% of students succeeded. Students received theoretical instruction on lab safety but had unfortunately no hands-on activities. This could indicate that the assessment practices in fall 2019 were more likely stricter than in spring 2020.
- A continuing action plan for several of the chemistry classes is to “provide more opportunities to improve problem solving skills”. In this year, STEM program offered additional tutoring session by peers from Cal State Long Beach Engineering program and STEM ambassadors from AVC. Some instructors ensure that extra time in lab is utilized for problem solving.
- Ability to meet some SLOs is impacted by poor math skills. Therefore, chemistry faculty are promoting math workshops, math tutoring, learning center interventions and have embedded SI into their classes.

Part 2.D. Review and comment on progress towards past program review goals:

Met Goal #1 (AS-T degree available)
 Goal #2 There is no consistent trend relating to the achievement gap in success rates among racial/ethnic groups
 Goal #3 Retention and success were trending upwards for most of the period of review.
 Partially met Goal #4 Instrumentation was purchased and is successfully being integrated into curriculum and used by honors students. Training and maintenance for the instrumentation as an ongoing need.

Part 3. Based on Part 2 above, please list program/area goals for 2020-2021:

Program/Area Goal #	Goal supports which ILO/PLO/SLO/OO?	Description of Goal	Steps to be taken to achieve goal?
Goal #1	ILO: 1, 3, 4, 7	Continuously improve SLOs that are underperforming, maintain	Hire fulltime faculty (retirement replacement) to ensure that quality instruction is provided

		those in which students are already exceeding expectations.	rather than by overloaded adjuncts and other full-time instructors.
Goal # 2	ILO: 7	Increase the number of AS-T chemistry awards	Maintain course offerings in face of budget cuts; encourage students to seek degree awards.
Goal # 3	ILO: 1, 2, 3, 4, 7	Undergraduate research	Incorporate into labs when we get back into the lab facilities. Hire faculty member with extensive research experience.

Part 4. Resource Requests that Support Program Needs (Based on above analyses and listed in priority order):

Type of Resource Request	Summary of Request	New or Repeat Request	Amount of Request, \$	One-Time or Recurring Cost, \$	Contact's Name
Faculty	Replacement of retiring faculty member (will require two hires to halfway fill the shoes of our distinguished colleague) in order to alleviate overloaded adjunct and full-time faculty.	New request	TBD	TBD	Chemistry Department
Classified Staff	none				
Technology	Printing capability in every lab to support the lab related SLOs.	new	10K	TBD	Chemistry Department
Physical/Facilities	Please let us back in.				
Supplies	HPLC and GC/MS and NMR require specific solvents, gases and glassware that need to be included in budget. These are necessary to support lab related SLOs and ensure support undergraduate research.	new	50K	recurring	Chemistry Department
Professional Development	More training on undergraduate research design and instrumentation to achieve our goal of expanding research opportunities for students.	repeat	48.5K	recurring	Chemistry Department
Other	Student help to support instructors during labs and more embedded tutors/SI in lecture to support Goal #1.	repeat	36K	recurring	Chemistry Department

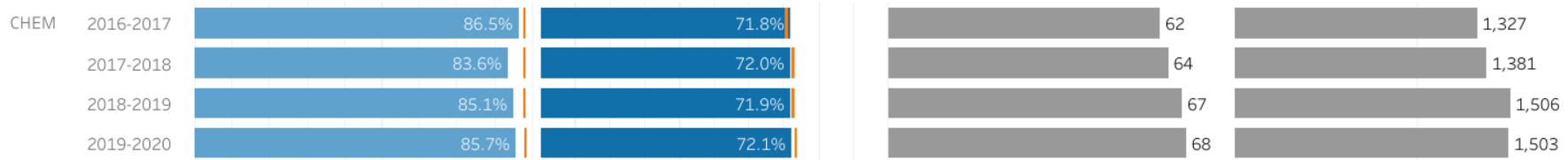
Part 5. Insert your Program Review Data here, as well as any other supporting data. (See Part 2.B above.)

Please Select **Subject** area (*twice*) and **Program Major(s)** to get your data --->

Select Subject CHEM	Select Subject again CHEM	Select Program Major(s) AS-T Chemistry (CHMT)	Academic Year Multiple values
------------------------	-------------------------------------	--	----------------------------------



Retention, Success, Number of Sections, & Enrollment in CHEM (Total AVC rates are shown as | *hover over to see data*)



Subject vs AVC Retention Rate

Subject vs AVC Success Rate

Number of Sections

Enrollment (Dupl., no EWs)

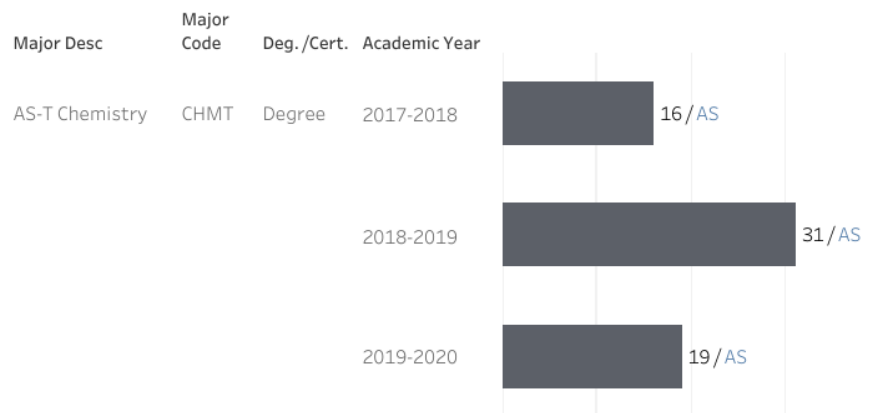
Enrollment and Number of Sections by **Modality** in CHEM

	Instr. Method	2016-2017	2017-2018	2018-2019	2019-2020
Number of Sections	Traditional	62	64	67	68
	Enrollment	1,327	1,381	1,506	1,556

Enrollment and Number of Sections by **Location** in CHEM

	Location	2016-2017	2017-2018	2018-2019	2019-2020
Number of Sections	Lancaster	60	63	64	65
	Palmdale	2	1	3	3
Enrollment	Lancaster	1,306	1,361	1,446	1,484
	Palmdale	21	20	60	72

Number of Degrees/Certificates Awarded in **AS-T Chemistry (CHMT)**



Number of Awards

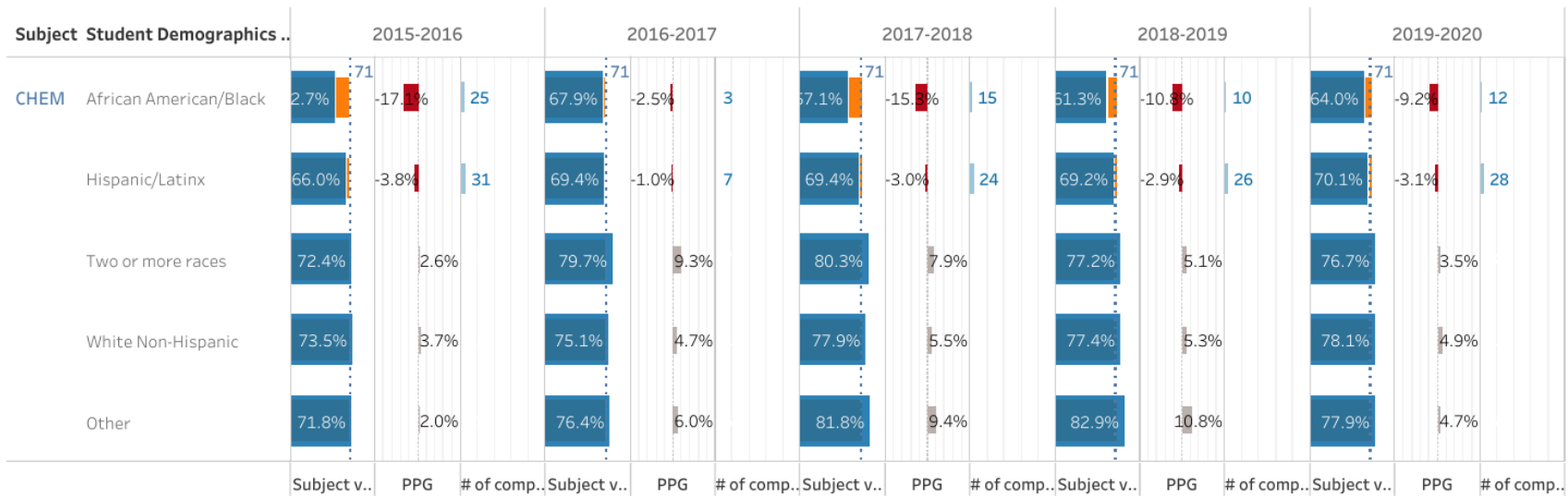
FTEF by Contract Type, Part-time/Full-time Ratio, FTES, FTES/FTEF in CHEM

	Fall 2016	Fall 2017	Fall 2018	Fall 2019
PT/Adjunct	5.9	4.3	4.5	4.7
FT/Regular	4.5	4.7	5.1	4.5
FT/Overload	2.3	1.7	1.9	2.6
TOTAL FTEF	12.7	10.7	11.6	11.8
PT/FT	1.3	0.9	0.9	1.1
FTES	151.1	138.9	162.7	164.9
FTES/FTEF Ratio	11.9	13.0	14.0	14.0
WSCH/FTEF Ratio	357.4	390.6	420.7	419.2

Click [here](#) to see AVC's Program awards dashboard



2015-2016, 2016-2017, 2017-2018 and 2 more Disproportionate Impact as Percentage Point Gap (PPG)
Blue Bars show Success Rate (SR) within the sub-Groups vs. AVC Annual SR (orange bar) vs. CHEM Annual SR (dotted line)



In 2015-2016, 2016-2017, 2017-2018 and 2 more, CHEM's Success Rate was 67.1% to 72.1% vs. AVC's Annual rate of 69.8% to 73.2%

Overall Disproportionate Impact as percentage point gap was : -2.7% to 1.4%

In CHEM, 1,327 to 1,506 was the enrollment count (duplicated headcount) (only shows if n > 10)

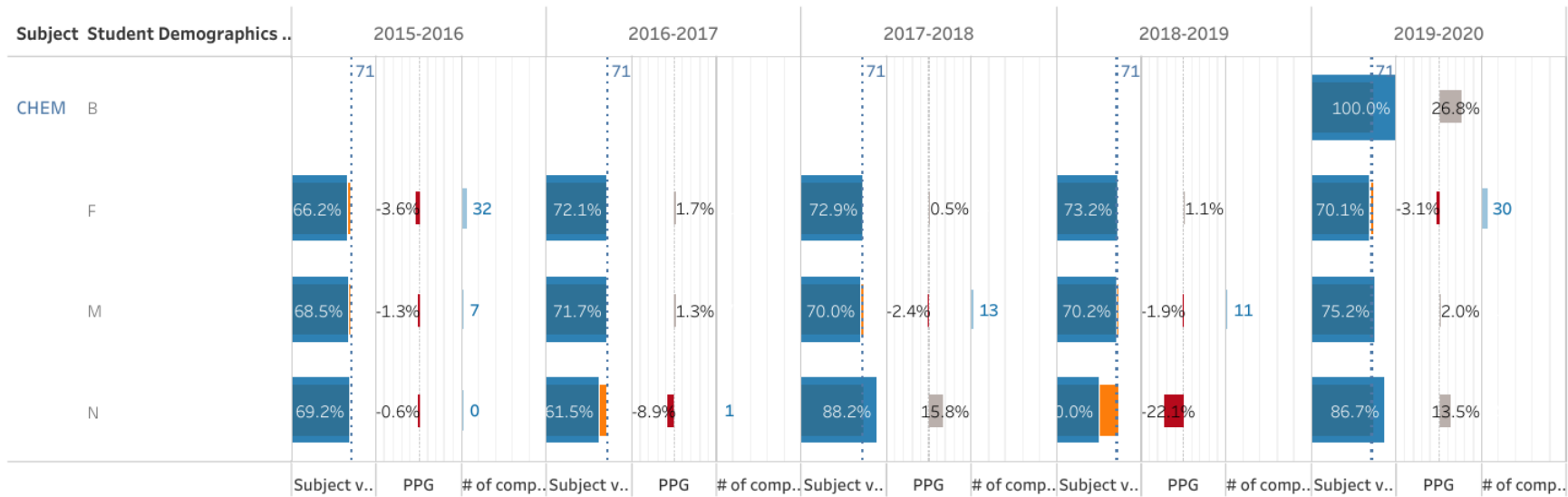
If there is a Disproportionate impact (PPG is negative), multiply the absolute value of PPG by the number of students and divide it by 100 to determine how many more successful completers would eliminate the gap.

(For example, (1,327 to 1,506 * |-2.7% to 1.4%|)=3 to 39. it means that 3 to 39 more successful course completers would help close the gap for this subject area)

(Hover over each bar in the chart to see details about each sub-group)



2015-2016, 2016-2017, 2017-2018 and 2 more Disproportionate Impact as Percentage Point Gap (PPG)
Blue Bars show Success Rate (SR) within the sub-Groups vs. AVC Annual SR (orange bar) vs. CHEM Annual SR (dotted line)



In 2015-2016, 2016-2017, 2017-2018 and 2 more, CHEM's Success Rate was 67.1% to 72.1% vs. AVC's Annual rate of 69.8% to 73.2%

Overall Disproportionate Impact as percentage point gap was : -2.7% to 1.4%

In CHEM, 1,327 to 1,506 was the enrollment count (duplicated headcount) (only shows if n > 10)

If there is a Disproportionate impact (PPG is negative), multiply the absolute value of PPG by the number of students and divide it by 100 to determine how many more successful completers would eliminate the gap.

(For example, (1,327 to 1,506 * |-2.7% to 1.4%|)=3 to 39. it means that 3 to 39 more successful course completers would help close the gap for this subject area)

(Hover over each bar in the chart to see details about each sub-group)

Division/Area Name: MSE Division – Computer Information Science	For Years: 2021-2022
Name of person leading this review: RICHARD BIRITWUM	
Names of all participants in this review: RICHARD BIRITWUM	

Part 1. Program Overview:

<p>1.1. Briefly describe how the program contributes to the district <u>mission</u>: The faculty and staff of the Business & Computer Studies Department are dedicated to providing students with hands-on training required for skill certification, continuing education classes, professional development, and the opportunity to learn the fundamentals necessary to be well educated in a particular discipline. Courses are provided for students who wish to complete a two-year degree or certificate, transfer to a four-year university, enter the business workforce, or simply upgrade their skills. The Computer Information Science program specifically contributes to the district mission by supporting: 1) students seeking technical software development education, develop analytical skills with a solid foundation in several programming languages to enter the professional workforce (Software Development Certificate), and also students seeking to transfer to a four-year University.</p>	
<p>1.2. <i>State briefly program highlights and accomplishments:</i> The Business & Computer Studies Department has produced approximately 10.5% (321 of 3,068) of AVC degrees and certificates awarded last academic year. As a small department in terms of number of full-time faculty, we have met the needs of our community and our students by helping them move forward in their career and educational goals.</p>	
<p>1.3. Check each <i>Institutional Learning Outcome (ILO)</i> supported by the program.</p>	
<input checked="" type="checkbox"/> Communication	<input type="checkbox"/> Demonstrates analytical reading and writing skills including research, quantitative and qualitative evaluation and synthesis. <input checked="" type="checkbox"/> Demonstrates listening and speaking skills that result in focused and coherent communications
<input type="checkbox"/> Creative, Critical, and Analytical Thinking	<input type="checkbox"/> Uses intellectual curiosity, judgment and analytical decision-making in the acquisition, integration and application of knowledge and skills. <input checked="" type="checkbox"/> Solves problems utilizing technology, quantitative and qualitative information and mathematical concepts.
<input checked="" type="checkbox"/> Community/Global Consciousness	<input type="checkbox"/> Understands and applies personal concepts of integrity, ethics, self-esteem, lifelong learning, while contributing to the well-being of society and the environment. <input type="checkbox"/> Demonstrates an awareness and respect of the values of diversity, complexity, aesthetics and varied cultural expressions.
<input checked="" type="checkbox"/> Career and Specialized Knowledge	<input checked="" type="checkbox"/> Demonstrates knowledge, skills and abilities related to student educational goals, including career, transfer and personal enrichment.
<p>1.4. Check each <i>Educational Master Plan (EMP)/Strategic Plan Goal</i> supported by the program.</p>	
<p>Goal 1*: Commitment to strengthening institutional effectiveness measures and practices.</p>	
<p>✓ Goal 2*: Increase efficient and effective use of resources: Technology; Facilities; Human Resources; Business Services.</p>	

✓ Goal 3: Focus on utilizing proven instructional strategies that will foster transferable intellectual skills.
Goal 4*: Advance more students to college-level coursework-Develop and implement effective placement tools.
✓ Goal 5: Align instructional programs to the skills identified by the labor market.

*Indicates College-Wide Priorities for 2018-2021 as of fall, 2018.

Part 2.A. Please provide the results of any internal and external environmental scan information you have gathered related to the program e.g. surveys, interviews, focus groups, advisory groups, licensure exam scores, job placement, State mandates, etc.:

According to EDD labor market information (LMI), the occupational projections for computer software developers, cybersecurity engineers, networking and IT technical professionals' shows growth of over 14.8% (15%) over the period 2014-2024.

Part 2.B. Analyze the program review data (please see the program review data retrieval instructions and attach your program review data page with any other supporting documents), the above environmental scan information, and anything else related to your area to identify the program strengths, weaknesses, opportunities, & threats (SWOT):

Strengths	Continued increase in enrollment and retention rates, new AS-T degree program and new Python programming course development, consistent graduation rates. Transitioning of the CIS discipline to Math, Science & Engineering Division provides tremendous opportunities for this program. Plans are underway to transform CIS to Computer Science, with strong focus on more technical 4-year transfer requirements. New AS-T Computer Science diploma offers greater visibility to our transfer students.
Weaknesses	Lack of additional FT Instructor to assist with course load, resignation of two Adjunct Instructors, and the reduction of course offering due to low enrollment as a result of the Coronavirus pandemic leading to virtual coursework.
Opportunities	Improved retention and enrollment rates should improve outlook for a new faculty member for program. Improved outlook to Increase the rate at which CIS students complete our programs as a result of transition to MSE; Improved outlook to Increase in number of Distant Education (DE) sections offered, number of certificates and degrees offered at both sites, and the rate of program completion by new students. High increase of transfer students from other Institutions into the Computer Science program.
Threats	Low new enrollment could threaten goals; continued gaps in college access and completion remain for low income and minority students in this program. Reduced state funding may lead to decreased course offerings, stymying thus the growth of the program.

Part 2.C. Review and comment on progress towards SLO/PLO/OO Action Plans:

Continuous improvement in SLO and PLO action plans over the long term will ensure continued student success in transferring to four-year institutions or to getting hired with high salaries for our graduates in local industries.

Part 2.D. Review and comment on progress towards past program review goals:

Previous CIS Program Reviews had consistently requested a new FT faculty for to assist with increased enrollment, retention and graduation. New classroom resources at MSE over the next few years will strengthen the CS program. Currently an ongoing effort.

Part 3. Based on Part 2 above, please list program/area goals for 2020-2021:

<i>Program/Area Goal #</i>	<i>We supports which ILO/PLO/SLO/OO?</i>	<i>Description of Goal</i>	<i>Steps to be taken to achieve goal?</i>
#1. Personnel	ILO #2, ILO # 4 CIS PLO Action Plan #1	The increase in CIS course enrollment is staggering, daytime load is overwhelming for only one FT Instructor, creating a need for another FT to supplement the program coursework.	Action Plan #1: Hire one new FT faculty for CIS. Action Plan #2: Hire two new Adjunct faculty for CIS.
#2. Classroom Technology (software and Hardware)	ILO #2, ILO #4 CIS PLO Action Plan #2	Student learning, engagement, progress and retention will be enhanced and impaMSEd through use of instructor-to-student interaction with assignments in the classroom.	Action Plan #1: Purchase new Integrated Development Environment (IDE) for CIS courses in Labs. Action Plan #2: Expand new classrooms outside Business building to accommodate CIS.
#3. Increased Funding to assist in marketing the program.	Once again, we need to engage the marketing department to create promotion flyers, and newsletters for area high schools. Provide means to visit High Schools to promote the CIS program, to broaden our appeal. Attend area public fairs at AV Fairgrounds to promote our program.	MSE block Funds application and Strong Workforce Program (SWP) funding will continue to be sought.	Action Plan #1: Purchase promotional materials for CIS from Funding sources. Action Plan #2: Create new pathways for CIS students through promotions on Radio & TV. Action Plan #3: Create new Website for Computer Science and Computer Engineering. A viable website will expose others to the vision of our program, and mission of AVC/MSE.
#4. Increased Collaboration required with Math, Science Division. To introduce and promote interdisciplinary courses, certificates and degrees.	Math, Sciences & Engineering division will increase our students' exposure to other disciplines which are required for job performance as well as transfer success to 4-year Universities.	Collaboration with CSU/LB, AVC Math and Sciences Division to integrate courses and resources for transfer students or job applicants. Areas include software programming courses and projects, mobile application development, and social media research and development efforts.	Action Plan #1: Create a collaborative plan of action between Computer Science & Computer Engineering within MSE. Action Plan #2: Create a collaborative plan between Computer Science/Computer Engineering with CSU-Long Beach.

			<p>Action Plan #3: Extend STEM program initiatives for Computer Science/Engineering with national STEM organizations.</p> <p>Action Plan #4: Provide students with development of new programs, degrees, and certificates.</p>
#5 Marketing & Outreach	Despite being a resource request, approval will promote overarching PLO for our discipline.	Increased awareness of the CIS program and job opportunities from our Industry partners in the region. Promote the program as a viable pathway for job positions in computer software programming and technical operating systems areas.	<p>Action Plan #1: AVC students will also review brochures, fliers, pamphlets, information sheets and webpage for courses articulated with CSUs and UCs, and plan accordingly.</p> <p>Action Plan #2: Enable CIS job applicants to review specific local companies hiring data.</p>

Part 4. Resource Requests that Support Program Needs (Based on above analyses and listed in priority order):

<i>Type of Resource Request</i>	<i>Summary of Request</i>	<i>New or Repeat Request</i>	<i>Amount of Request, \$</i>	<i>One-Time or Recurring Cost, \$</i>	<i>Contact's Name</i>
Faculty	Hire FT Instructor of CIS program	Repeat	\$100,000	Recurring	Christos Valiotis
Adjunct Faculty	Hire two CIS Adjunct faculty	New	\$120,00	Recurring	Richard Biritwum/Alex Schroer/Christos Valiotis
Technology	More updated Computers, Audio-Video components, Furniture.	Repeat	\$220,000	One-Time	Richard Biritwum/Alex Schroer/Christos Valiotis
Physical/Facilities					
Supplies	Consumables for CIS/Engineering Labs at Business and APL buildings.	Repeat	\$9,000	Recurring	Richard Biritwum
Professional Development	California Engineering Liaison Council bi-Annual meetings	New	\$2,000	Recurring	Richard Biritwum
Other					

Division/Area Name: MSE Division- Engineering Department	For Years: 2021-2022
Name of person leading this review: Jonathan Compton, faculty	
Names of all participants in this review: Christos Valiotis, Dean; Alex Schroer, Chair	

Part 1. Program Overview:

1.1. Briefly describe how the program contributes to the district <u>mission</u>								
The AVC engineering program continues to play a pivotal role in attracting, retaining and graduating/transferring students in engineering majors that are so highly sought after by the local aerospace and manufacturing industry. The AVC engineering student population is very diverse, closely resembling the overall area demographics.								
AVC Engineering								
	Enrollment by Sex				% of Total			
	2016-17	2017-18	2018-19	2019-20	2016-17	2017-18	2018-19	2019-20
Female	60	80	77	96	16%	22%	23%	19%
Male	312	287	257	417	84%	78%	77%	81%
Total	372	367	334	513				
	Enrollment by Race/Ethnicity				% of Total			
	2016-17	2017-18	2018-19	2019-20	2016-17	2017-18	2018-19	2019-20
Hisp	207	207	193	320	57%	55%	58%	61%
Afr. Amer	0	0	0	16	0%	0%	0%	3%
White	118	103	77	125	32%	28%	23%	24%
Two or More	15	29	17	18	4%	8%	5%	3%
Other	26	34	45	45	7%	9%	14%	9%
Total	366	373	332	524				
Hispanic enrollment has increased steadily between 16-17 and 19-20 (55% increase) representing now over 60% of total enrollment. Compared to the national average of 22% (2018 data published by NSF), AVC's Hispanic enrollment percentage, is almost 3 times as large. The program has also experienced a significant increase in female student enrollment between 16-17 and 19-20 (60%) representing now 19% of total enrollment. This is on par with the national enrollment of 21.4%. In 2018, the STEM program and particularly the engineering department was awarded a \$3.75 million grant from US Department of								

Education under the Hispanic Serving Institutions program. Outreach efforts funded by the grant have resulted in significant gains towards diversity and equity for our underserved populations. However we still need to do more to close the significant gap in enrollment for our African/American students.

1.2.State briefly program highlights and accomplishments

The program maintains full C-ID articulation and has increased our course articulations with 4yr Universities by ~40% since 2018. We have developed new degree pathways that have increased our completion numbers by 1300% in the last two years since they were implemented.

1.3. Check each Institutional Learning Outcome (ILO) supported by the program. Type an “X” if checkbox is unavailable.

<input type="checkbox"/> Communication	<input checked="" type="checkbox"/> Demonstrates analytical reading and writing skills including research, quantitative and qualitative evaluation and synthesis. <input type="checkbox"/> Demonstrates listening and speaking skills that result in focused and coherent communications
<input type="checkbox"/> Creative, Critical, and Analytical Thinking	<input checked="" type="checkbox"/> Uses intellectual curiosity, judgment and analytical decision-making in the acquisition, integration and application of knowledge and skills. <input checked="" type="checkbox"/> Solves problems utilizing technology, quantitative and qualitative information and mathematical concepts.
<input type="checkbox"/> Community/Global Consciousness	<input type="checkbox"/> Understands and applies personal concepts of integrity, ethics, self-esteem, lifelong learning, while contributing to the well-being of society and the environment. <input checked="" type="checkbox"/> Demonstrates an awareness and respect of the values of diversity, complexity, aesthetics and varied cultural expressions.
<input type="checkbox"/> Career and Specialized Knowledge	<input checked="" type="checkbox"/> Demonstrates knowledge, skills and abilities related to student educational goals, including career, transfer and personal enrichment.

1.4. Check each Educational Master Plan (EMP)/Strategic Plan Goal supported by the program. Type an “X” if checkbox is unavailable.

<input type="checkbox"/> Goal 1* : Commitment to strengthening institutional effectiveness measures and practices.
<input checked="" type="checkbox"/> Goal 2* : Increase efficient and effective use of resources: Technology; Facilities; Human Resources; Business Services.
<input checked="" type="checkbox"/> Goal 3 : Focus on utilizing proven instructional strategies that will foster transferable intellectual skills.
<input checked="" type="checkbox"/> Goal 4* : Advance more students to college-level coursework-Develop and implement effective placement tools.
<input type="checkbox"/> Goal 5 : Align instructional programs to the skills identified by the labor market.

*Indicates College-Wide Priorities for 2019-2020

Part 2.A. Please provide the results of any internal and external environmental scan information you have gathered related to the program e.g. surveys, interviews, focus groups, advisory groups, licensure exam scores, job placement, State mandates, etc.:

On an annual basis, we monitor graduation data from the local Engineering program administered by CSU Long Beach. Since 2012, the program has graduated over 150 students more than 75% of which are AVC transfers. As of December 2019, all of those students have secured employment before graduation if sought.

Part 2.B. Analyze the [program review data](#) (please see the program review data retrieval instructions and attach your program review data page with any other supporting documents), the above environmental scan information, and anything else related to your area to identify the program strengths, weaknesses, opportunities, & threats (SWOT):

Strengths	Our average retention (>90%) and average success rates (~82%) are very good for such a difficult major
Weaknesses	Even with the increase of completions, we are still lacking compare to the number of students transferring
Opportunities	We will continue to stress the importance of degree completion with students and counselors
Threats	Our current threats stem from the lockdown. We cannot get our students the hands on experience they need/deserve to be successful engineers

Part 2.C. Review and comment on progress towards SLO/PLO/OO Action Plans:

<p>We can see evidence in our SLO data that as well as the feedback from students that we can benefit</p> <p>SLO - The remodel, furnishing, and hardware allotted for our computer lab has helped increase student efficiency and success. Students have a welcomed environment to come in and work on computational assignments.</p> <p>PLO – Appropriate lab for engineering – We do not have a formal engineering lab to this date. We have a shared lecture/lab space that is not suitable for lab instruction. We have acquired two addition rooms to house our labs, but we will need to fully renovate these rooms to accommodate our engineering hardware (mechanical and electrical).</p>
--

Part 2.D. Review and comment on progress towards past program review goals:

<p>Goal 1 - We have definitely had an increase in degree completions (1300%) due to our implementation of the degree pathways to support specific engineering disciplines.</p> <p>Goal 2 – We are still struggling with this goal since our lab is still a shared space for lecture and not a true lab space. We have acquired additional space to hopefully complete a true lab space for our students to succeed in lab.</p>
--

Part 3. Based on Part 2 above, please list program/area goals for 2020-2021:

Program/Area Goal #	Goal supports which ILO/PLO/SLO/OO?	Description of Goal	Steps to be taken to achieve goal?
Goal #1	ILO : 7	Increase engineering degree completions	We will continue to work with counseling and our students to make them aware of the degree program as well as continue increasing our articulation with universities to ensure all of our courses count. We hope to acquire a second faculty member to help develop a more consistent schedule to help students complete degrees in a timely manner. I am currently an integral part of the C-ID program for ENGR and as such I am expected to attend our bi-annual CAELC meetings held throughout the state.

			These meetings help standardize curriculum across the state which helps with articulation for us.
Goal #2	ILO: 1, 3, 4, 6, 7	Increase the success of our courses that contain hands on lab sections	We need to develop the new space acquired to suite both a mechanical engineering lab as well as an electrical engineering lab. This will support the following lab courses (ENGR 130, ENGR 185, and ENGR 230). This will include renovating the rooms to handle the electrical and mechanical devices needed to run these labs as well as proper lab benches for both to ensure safety for students.

Part 4. Resource Requests that Support Program Needs (Based on above analyses and listed in priority order):

Type of Resource Request	Summary of Request	New or Repeat Request	Amount of Request, \$	One-Time or Recurring Cost, \$	Contact's Name
Faculty	Second Faculty member	Repeat	\$100,000 (Salary and benefits)	Recurring	Jonathan Compton
Classified Staff					
Technology	Lab equipment to duplicate what is there, to be able to actually complete a lab within a given class period instead of 2 or 3 due to lack of equipment	New	\$100,000	One-Time	Jonathan Compton
Physical/Facilities	Lab benches and chairs to support a mechanical engineering lab. Lab benches and chairs to support a electrical engineering lab.	Repeat	\$60,000	One-Time	Jonathan Compton
Supplies	Consumables for the Engineering labs	Repeat	\$6,000	Recurring	Jonathan Compton
Professional Development	California Engineering Liaison Council bi-annual meetings	Repeat	\$1,500	Recurring	Jonathan Compton
Other					

Part 5. Insert your Program Review Data here, as well as any other supporting data. (See Part 2.B above.)

Please Select **Subject** area (twice) and **Program Major(s)** to get your data --->

Select Subject
ENGR

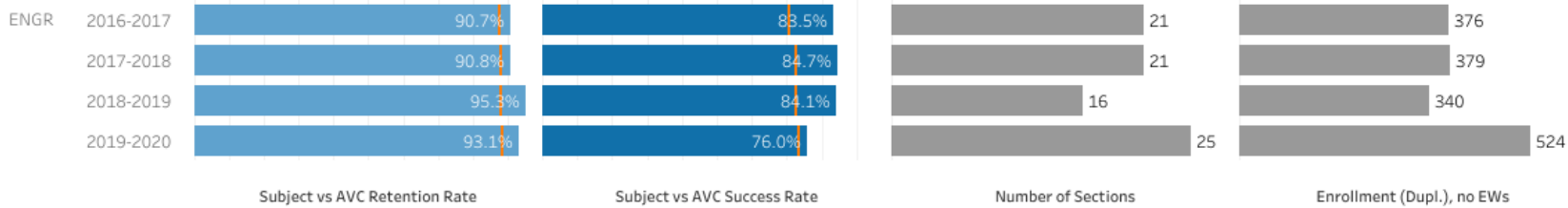
Select Subject again
ENGR

Select Program Major(s)
Multiple values

Academic Year
Multiple values



Retention, Success, Number of Sections, & Enrollment in ENGR (Total AVC rates are shown as | hover over to see data)



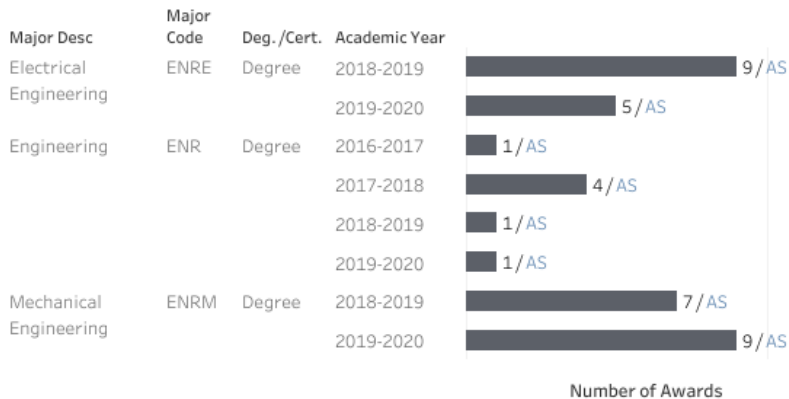
Enrollment and Number of Sections by **Modality** in ENGR

Instr. Method	2016-2017	2017-2018	2018-2019	2019-2020
Number of Sections				
Online				5
Other Indep S..				1
Traditional	21	21	16	19
Enrollment				
Online				109
Other Indep S..				1
Traditional	376	379	340	428

Enrollment and Number of Sections by **Location** in ENGR

Location	2016-2017	2017-2018	2018-2019	2019-2020
Number of Sections				
Lancaster	21	21	16	25
Enrollment				
Lancaster	376	379	340	538

Number of Degrees/Certificates Awarded in [Computer Engineering \(COEN\)](#), [Electrical Engineering \(ENRE\)](#), [Engineering \(ENR\)](#) and 1 more



FTEF by Contract Type, Part-time/Full-time Ratio, FTES, FTES/FTEF in ENGR

	Fall 2016	Fall 2017	Fall 2018	Fall 2019
PT/Adjunct	1.0	1.0	0.5	1.1
FT/Regular	1.1	1.5	1.1	1.2
FT/Overload		0.3		0.7
TOTAL FTEF	2.1	2.8	1.7	2.9
PT/FT	0.9	0.7	0.5	0.9
FTES	19.6	28.3	20.2	33.3
FTES/FTEF Ratio	9.3	10.2	12.1	11.5
WSCH/FTEF Ratio	280.1	307.1	362.9	344.9

Click [here](#) to see AVC's Program awards dashboard

Division/Area Name: MSE Division- Geosciences – GEOL / GEOG / ERSC	For Years: 2019-2020
Name of person leading this review:	Mike Pesses
Names of all participants in this review:	Aurora Burd, Paul Stahmann

Part 1. Program Overview:

1.1. Briefly describe how the program contributes to the district <u>mission</u>	
The Geosciences Department contributes to the institution’s “quality, comprehensive education” by offering rigorous courses that lead to associates degrees, transfer, and career technical education.	
1.2. State briefly program highlights and accomplishments	
Our department hosted an open house event which was well attended by students. While we do not formally survey students after they have left the program at AVC, we know of at least one geology graduate who has transferred into a highly ranked Earth Science program, one who recently graduated from UCSB with a BS in Geophysics and is now applying to graduate school , and a geography student who has begun doing GIS work with the City of Lancaster.	
1.3. Check each <u>Institutional Learning Outcome (ILO)</u> supported by the program. Type an “X” if checkbox is unavailable.	
X Communication	X Demonstrates analytical reading and writing skills including research, quantitative and qualitative evaluation and synthesis. <input type="checkbox"/> Demonstrates listening and speaking skills that result in focused and coherent communications
X Creative, Critical, and Analytical Thinking	X Uses intellectual curiosity, judgment and analytical decision-making in the acquisition, integration and application of knowledge and skills. X Solves problems utilizing technology, quantitative and qualitative information and mathematical concepts.
X Community/Global Consciousness	X Understands and applies personal concepts of integrity, ethics, self-esteem, lifelong learning, while contributing to the well-being of society and the environment. X Demonstrates an awareness and respect of the values of diversity, complexity, aesthetics and varied cultural expressions.
X Career and Specialized Knowledge	X Demonstrates knowledge, skills and abilities related to student educational goals, including career, transfer and personal

	enrichment.
1.4. Check each <u>Educational Master Plan (EMP)/Strategic Plan Goal</u> supported by the program. Type an "X" if checkbox is unavailable.	
<input type="checkbox"/>	Goal 1*: Commitment to strengthening institutional effectiveness measures and practices.
<input type="checkbox"/>	Goal 2*: Increase efficient and effective use of resources: Technology; Facilities; Human Resources; Business Services.
<input checked="" type="checkbox"/>	Goal 3: Focus on utilizing proven instructional strategies that will foster transferable intellectual skills.
<input type="checkbox"/>	Goal 4*: Advance more students to college-level coursework-Develop and implement effective placement tools.
<input checked="" type="checkbox"/>	Goal 5: Align instructional programs to the skills identified by the labor market.

*Indicates College-Wide Priorities for 2019-2020

Part 2.A. Please provide the results of any internal and external environmental scan information you have gathered related to the program e.g. surveys, interviews, focus groups, advisory groups, licensure exam scores, job placement, State mandates, etc.:

The GIS Advisory Committee has stressed the continued importance of well-trained entry level GIS. In this, and the other programs within our department, we strive to ensure that our graduates are well prepared for transfer to a university or entry-level work. The Geography Department at CSUN also continues to communicate their satisfaction with our students who transfer into their program.

Part 2.B. Analyze the program review data (please see the program review data retrieval instructions and attach your program review data page with any other supporting documents), the above environmental scan information, and anything else related to your area to identify the program strengths, weaknesses, opportunities, & threats (SWOT):

Strengths	For the most part, the geosciences courses are at or above the AVC averages for retention and success. When examining the student demographics, we are typically above the AVC average. For example, for Latinx students Earth Science and Geography all had retention rates over 90% (AVC averages were around 87%) and success rates ranging from 75% to 83% (AVC averages were around 71%). Geology was just under the AVC averages during this same period, which is good considering the amount of chemistry and physics material necessary to be taught in the coursework.
Weaknesses	COVID-19 prevented us from making progress in a goal from the last program review, which was to develop a better outreach strategy with the counseling division. We still need to work toward encouraging more students to major in our programs. During the study period, nine students earned AA-T degrees in geography, one earned an AS-T in geology, and one earned a certificate in GIS. These numbers are much lower than we would like. Again, student outreach is crucial. Another weakness is our student success and retention amongst African American students. None of the years in this study saw any of our classes reaching AVC averages for either metric, with the exception of Earth Science last year. For the most part, student success for this group was around 60%. We need to address this gap.
Opportunities	In addition to global environmental degradation demanding students majoring in the geosciences to help save the planet, this and future pandemics suggest that we will need more spatially adept graduates mapping diseases and delivering resources to

	where they are needed. Dedicating more time to these subjects should help us fill classes and increase the number of students choosing majors in the geosciences.
Threats	While it is not yet safe to resume face-to-face classes, the lack of human interaction has made it difficult to get students excited about pursuing a career in the geosciences.

Part 2.C. Review and comment on progress towards SLO/PLO/OO Action Plans:

Many of our action plans revolve around developing more resources for students to understand key concepts. COVID-19 and the switch to remote learning has actually helped us work toward developing and locating resources like videos and animations that students can access at any time and view as often as they need. After this period of remote learning is done, we will continue to provide access to the resources in the hopes that this will improve student success.

Part 2.D. Review and comment on progress towards past program review goals:

As mentioned above, COVID-19 thwarted progress towards better outreach with students to increase enrollment numbers. Once the campus returns to a more normal situation, we plan to commit towards achieving this goal.

While not explicitly shown in previous program review data, Fall 2018 saw an expansion of geoscience courses into the new Palmdale Center. This has gone smoothly with an overall increase in sections offered and students served. However, an initial purchase of supplies allowed most lab materials to be duplicated at the new location, a few labs are still missing supplies, primarily maps, as the original plan was to print our own using the poster plotter in the UH 257 geoscience prep room. Unfortunately, this plotter seems to be continually broken. Prior to resuming face-to-face lab instruction at the Palmdale Center, these maps need to be printed either in house or via a vendor like FedEx, then laminated at the AVC IMC, as we want to ensure that students at both the Lancaster and Palmdale campuses have access to quality laboratory materials. Without these materials, students at the Palmdale campus will eventually fall behind their Lancaster campus peers in terms of student success.

Part 3. Based on Part 2 above, please list program/area goals for 2020-2021:

<i>Program/Area Goal #</i>	<i>Goal supports which ILO/PLO/SLO/OO?</i>	<i>Description of Goal</i>	<i>Steps to be taken to achieve goal?</i>
1. Counseling Outreach	ILOs 1-4	Work with counseling to attract more students to our classes and programs.	Meet with counseling to design brochures or other materials to inform students.

Part 4. Resource Requests that Support Program Needs (Based on above analyses and listed in priority order):

<i>Type of Resource Request</i>	<i>Summary of Request</i>	<i>New or Repeat Request</i>	<i>Amount of Request, \$</i>	<i>One-Time or Recurring Cost, \$</i>	<i>Contact's Name</i>
Faculty					

Classified Staff					
Technology					
Physical/Facilities					
Supplies	USGS 7.5-minute and 15-minute topo maps, approximately 24 maps at \$8 each plus \$5 S&H (and tax); 2010 geologic map from CA Geologic Survey, 2 at \$25 plus \$8 S&H (and tax)	A bit of both (see above)	Approximately \$300	One-time	Dr. Aurora Burd
Professional Development					
Other					

Part 5. Insert your Program Review Data here, as well as any other supporting data. (See Part 2.B above.)

Please Select **Subject** area (twice) and **Program Major(s)** to get your data --->

Select Subject
Multiple values

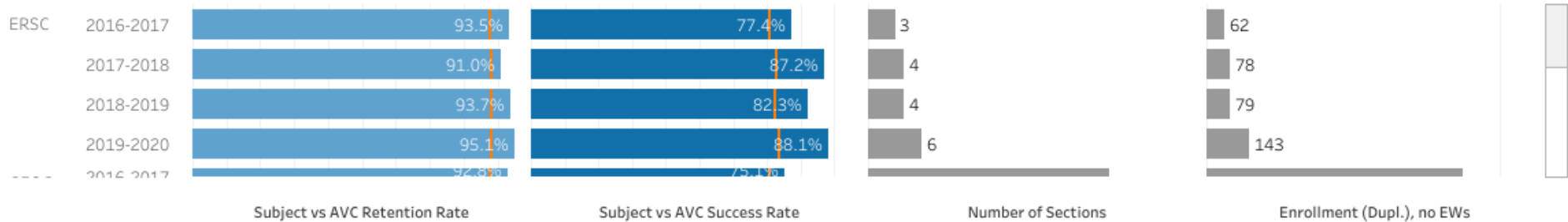
Select Subject again
Multiple values

Select Program Major(s)
Multiple values

Academic Year
Multiple values



Retention, Success, Number of Sections, & Enrollment in All (Total AVC rates are shown as | hover over to see data)



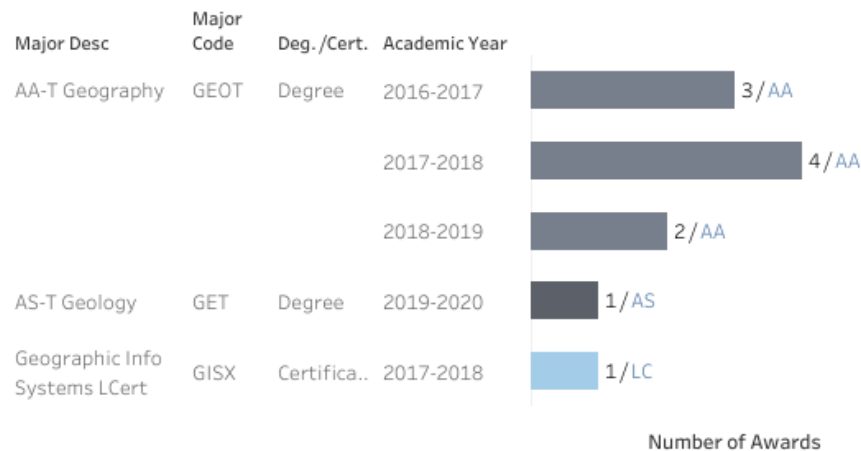
Enrollment and Number of Sections by *Modality* in All

	Instr. Method	2016-2017	2017-2018	2018-2019	2019-2020
Number of Sections	Online		2	5	5
	Other Inde..		1		1
	Traditional	3 27 14	4 28 14	4 27 10	6 26 11
Enrollment	Online		58	##	##
	Other Inde..		1		1
	Traditional	62 ## ##	78 ## ##	79 ## ##	## ## ##

Enrollment and Number of Sections by *Location* in All

	Location	2016-2017	2017-2018	2018-2019	2019-2020
Number of Sections	Lancaster	3 22 13	4 26 12	4 26 10	5 26 9
	Lancaster ..				1
	Palmdale	5 1	5 2	6	6 2
Enrollment	Lancaster	62 ## ##	78 ## ##	79 ## ##	## ## ##
	Lancaster ..				22
	Palmdale	## 26	75 42	##	## 56

Number of Degrees/Certificates Awarded in [AA-T Geography \(GEOT\)](#), [AS-T Geology \(GET\)](#), [Geographic Info Systems LCert \(GISX\)](#)



FTEF by Contract Type, Part-time/Full-time Ratio, FTES, FTES/FTEF in **ERSC**, **GEOG**, **GEOL**

	Fall ..	Fall ..	Fall ..	Fall ..	Fall ..	Fall ..	Fall ..	Fall ..	Fall ..	Fall ..	Fall ..	Fall ..
PT/Adjunct					1.3	1.1	0.9	0.7	0.2	0.2		
FT/Regular	0.2	0.8	0.6	0.2	1.1	1.0	1.0	0.8	1.0	0.7	0.7	0.9
FT/Overlo..	0.2		0.2	0.6			0.2	0.6		0.1		0.4
TOTAL FTEF	0.4	0.8	0.8	0.8	2.5	2.1	2.1	2.1	1.2	1.0	0.7	1.3
PT/FT		0.0	0.0	0.0	1.2	1.2	0.9	1.0	0.2	0.3	0.0	0.0
FTES	4.1	7.1	7.7	10.8	41.2	26.2	26.4	34.8	19.6	19.2	8.6	16.4
FTES/FTEF..	10.4	8.8	9.6	13.5	16.7	12.5	12.6	16.6	16.3	19.2	11.8	12.6
WSCH/FTE..	###	###	###	###	###	###	###	###	###	###	###	###

Click [here](#) to see AVC's Program awards dashboard

Division/Area Name: MSE Division-Mathematics Department - MATH	For Years: 2021-2022
Name of person leading this review: James Dorn	
Names of all participants in this review: James Dorn, Josh Strong, Christos Valiotis	

Part 1. Program Overview:

1.1. Briefly describe how the program contributes to the district <u>mission</u>
The mathematics department is dedicated to providing a quality, comprehensive education to a diverse population of learners. Most awards at AVC have a math requirement so though we may not have an extensive number of degree pursuers, the impact of the department is widespread.
1.2. State briefly program highlights and accomplishments
The department became fully AB705 compliant beginning in Fall 2019. Placement rubrics adhering to the new guidelines were created and distributed, which led to a relatively smooth transition to an entirely different mechanism for student placement. A record number of sections in Statistics ran in Fall 2019. The department was successful in moving classes to be fully remote during Spring 2020. The math faculty have quickly transitioned to the new method due to COVID-19 restrictions. The mathematics faculty professional development group, "Math Online Teaching," has continued to be a source of useful information regarding online pedagogy. The department was able to hold the long-standing tradition of the annual "Math Field Day." This was held just before the college transitioned to remote learning.

1.3. Check each <u>Institutional Learning Outcome (ILO)</u> supported by the program. Type an "X" if checkbox is unavailable.	
<input checked="" type="checkbox"/> Communication	<input checked="" type="checkbox"/> Demonstrates analytical reading and writing skills including research, quantitative and qualitative evaluation and synthesis. <input type="checkbox"/> Demonstrates listening and speaking skills that result in focused and coherent communications
<input checked="" type="checkbox"/> Creative, Critical, and Analytical Thinking	<input checked="" type="checkbox"/> Uses intellectual curiosity, judgment and analytical decision-making in the acquisition, integration and application of knowledge and skills. <input checked="" type="checkbox"/> Solves problems utilizing technology, quantitative and qualitative information and mathematical concepts.
<input type="checkbox"/> Community/Global Consciousness	<input type="checkbox"/> Understands and applies personal concepts of integrity, ethics, self-esteem, lifelong learning, while contributing to the well-being of society and the environment. <input type="checkbox"/> Demonstrates an awareness and respect of the values of diversity, complexity, aesthetics and varied cultural expressions.
<input checked="" type="checkbox"/> Career and Specialized Knowledge	<input checked="" type="checkbox"/> Demonstrates knowledge, skills and abilities related to student educational goals, including career, transfer and personal enrichment.
1.4. Check each <u>Educational Master Plan (EMP)/Strategic Plan Goal</u> supported by the program. Type an "X" if checkbox is unavailable.	
<input checked="" type="checkbox"/> Goal 1* : Commitment to strengthening institutional effectiveness measures and practices.	

<input checked="" type="checkbox"/> Goal 2* : Increase efficient and effective use of resources: Technology; Facilities; Human Resources; Business Services.
<input checked="" type="checkbox"/> Goal 3 : Focus on utilizing proven instructional strategies that will foster transferable intellectual skills.
<input checked="" type="checkbox"/> Goal 4* : Advance more students to college-level coursework-Develop and implement effective placement tools.
<input type="checkbox"/> Goal 5 : Align instructional programs to the skills identified by the labor market.

*Indicates College-Wide Priorities for 2019-2020

Part 2.A. Please provide the results of any internal and external environmental scan information you have gathered related to the program e.g. surveys, interviews, focus groups, advisory groups, licensure exam scores, job placement, State mandates, etc.:

The Mathematics Department does not have any classes that are classified as designated as Vocational and Technical Education and therefore do not participate in environmental scans and focus groups etc. The increased number of students entering into transfer level classes, due to AB705, as well as the shift to remote learning has created many challenges for the department. While the impact of the increased number of transfer level classes remains a focus of the department, a significant amount of attention has also been given to the transition to remote learning. Mathematics faculty have regularly discussed and presented methods of remote instruction. However, the process is moving forward.

Part 2.B. Analyze the [program review data](#) (please see the program review data retrieval instructions and attach your program review data page with any other supporting documents), the above environmental scan information, and anything else related to your area to identify the program strengths, weaknesses, opportunities, & threats (SWOT):

Strengths	Number of degrees awarded increased and retention rate remained within one percent of the previous year. Success rates in the entry level STEM class (Math 135) increased over 2018/2019 in all demographic categories. The number of students successfully completing Math 115, Math 135, and Math 140 increased by 72.4%, 13.8%, and 36.5% respectively.
Weaknesses	Success rates in the entry level transfer class (Math 115) dropped in all demographic categories.
Opportunities	<p>It is difficult at this time to make any definitive analysis or plans for change due to the confluence of two major events over the past year. AB705 greatly changed the process of student placement, providing direct access for students into college level math regardless of their prior level of preparation. That led to eliminating over 100 sections of developmental math. Though initially it seems that the projections of a need for an increase in sections of Math 115 (from 23 to 44) and a decrease in sections of Math 102 (from 52 to 25) were on point. However, it is important to acknowledge that Fall 2019 saw an unprecedented cancelling of 25 sections of mathematics. Carrying over to Spring 2020, the force of OLI instruction due to the COVID outbreak was also unprecedented and its effect on a reduction of sections and decreased success rates is difficult to parse.</p> <p>Internally, a major focus for the department was providing students, especially those that are identified as requiring support the necessary avenues to be successful. Numerous faculty participated in providing an extensive collection of course specific workshops to help students. It is unknown at this time as to the effectiveness of the workshops on student success. There is a need for specific data relating to the students that were identified as “support recommended” and “support strongly recommended” in the new placement process and their success rates along with the success rates of those students that participated in the workshops. Once this data can be gathered and analyzed, a clearer direction as to whether or not to continue</p>

offering workshops as the primary support mechanism for under prepared students or a shift into a more effective strategy for remediation is necessary. It may be necessary to adopt the strategy of Co-requisite support that many other California Community Colleges have implemented. If this is the case, there may be a significant budgetary impact as the need for instructors to include the support classes in their load would translate into fewer sections taught for base load.

Additionally, the placement numbers that we see, especially the relatively high percentage of non-traditional students, suggest the creation of Guided self-placement videos or other mechanisms may be beneficial in directing students to the course that will be of most benefit to them.

Fall 2019 Placement Data

37% of incoming students are identified as support rec/strongly rec. for transfer

67% of incoming students are identified as support rec/strongly rec. for STEM

22% of incoming students are not traditional.

Spring 2020 Placement Data

35.1% of incoming students are identified as support rec/strongly rec. for transfer

65.5% of incoming students are identified as support rec/strongly rec. for STEM

25.5% of incoming students are not traditional.

Success Rates:

Math 102: (#'s/Success)

2018-2019 3,165/57.7%

2019-2020 1,988/51.3%

Math 115:

2018-2019 1,998/70.1%

2019-2020 3,446/68.3%

Math 135:

2018-2019 798/53.5%

2019-2020 908/60.6%

Math 140:

2018-2019 463/72.4%

2019-2020 632/73.8%

Threats	Due to the transition to remote learning, student enrolment and retention may decrease. The effect of COVID on the state budget and restrictions on teaching modality are both unknowns that could potentially have a negative effect on course offerings and student success and retention.
----------------	--

Part 2.C. Review and comment on progress towards SLO/PLO/OO Action Plans:

The department has shifted to eLumen. SLO and action plan data are being gathered and stored in a centralized location. General guidelines to SLO assessments have been established. Within eLumen, action plan templates have been assigned to all classes to provide faculty with the opportunity to reflect on the SLO assessment process while the information and insights about class performance are fresh in mind.

Regarding information discussed on various action plans, there are a few courses in which there was a large amount of variation in success rates on SLOs between sections of classes. The department feels that revisiting the SLO assessment process, rubric scoring, and SLO problem choice will help with consistency of assessment results.

Part 2.D. Review and comment on progress towards past program review goals:

Goal #1: To fully implement a new SLO and PLO assessment procedure to focus on student learning that is consistent throughout the department. SLO and PLO assessment has been standardized throughout the department and data collection continues.

Goal #2: To provide students with support options for just in time remediation to maximize opportunity of completing transfer level courses. The Math Computer Lab continues to operate as well as math workshops and tutoring are held throughout the week. When necessary, faculty will also review basic skills.

Goal #3: Enhance best practices in Statistics instruction to increase student success due to the anticipated dramatic increase in the number of students enrolling in these sections. Faculty have received much more exposure and instruction regarding programs such as RStudio, StatCrunch, and Canvas modules designed for Statistics. These programs are very useful for Statistics instruction.

Part 3. Based on Part 2 above, please list program/area goals for 2020-2021:

Program/Area Goal #	Goal supports which ILO/PLO/SLO/OO?	Description of Goal	Steps to be taken to achieve goal?
Goal #1	ILO: 1, 2 PLO: 1, 2 SLO: 1, 2	To develop more techniques for teaching in a remote environment.	Hold faculty professional development meetings to collaborate on new and successful online pedagogy. Discuss strategies during math department meetings.
Goal #2	ILO: 1, 2 PLO: 1, 2	To provide online support to increase student success.	Create a repository for general instructions on how to navigate

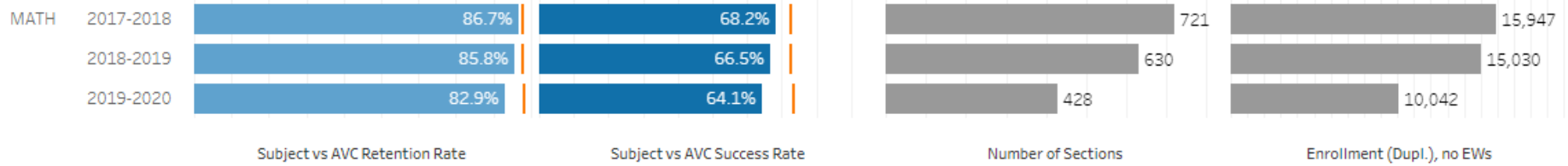
	SLO: 1, 2		online programs used by the department.
Goal #3	ILO: 1, 2, 3, 4 PLO: 1, 2 SLO: 1, 2	To determine the effectiveness of current support mechanisms as pertains to students that have been identified as recommended support.	Request and analyze success rates for students that have participated in support workshops. Continue workshops as the primary support mechanism or explore additional avenues of student support such as corequisite support.

Part 4. Resource Requests that Support Program Needs (Based on above analyses and listed in priority order):

<i>Type of Resource Request</i>	<i>Summary of Request</i>	<i>New or Repeat Request</i>	<i>Amount of Request, \$</i>	<i>One-Time or Recurring Cost, \$</i>	<i>Contact's Name</i>
Faculty	Replacement of Instructor	New	\$100,000	Recurring	Christos Valiotis
Classified Staff	N/A				
Technology	Touchscreen laptops/tablets with stylus for faculty to teach remotely	New	\$10,000	One Time	James Dorn/Josh Strong
	Educosoft	Repeat	\$40,000	Recurring	James Dorn
Physical/Facilities					
Supplies					
Professional Development					
Other	Math Tutors	Repeat	\$10,000	Recurring	James Dorn

Part 5. Insert your Program Review Data here, as well as any other supporting data. (See Part 2.B above.)

Retention, Success, Number of Sections, & Enrollment in MATH (Total AVC rates are shown as | *hover over to see data*)



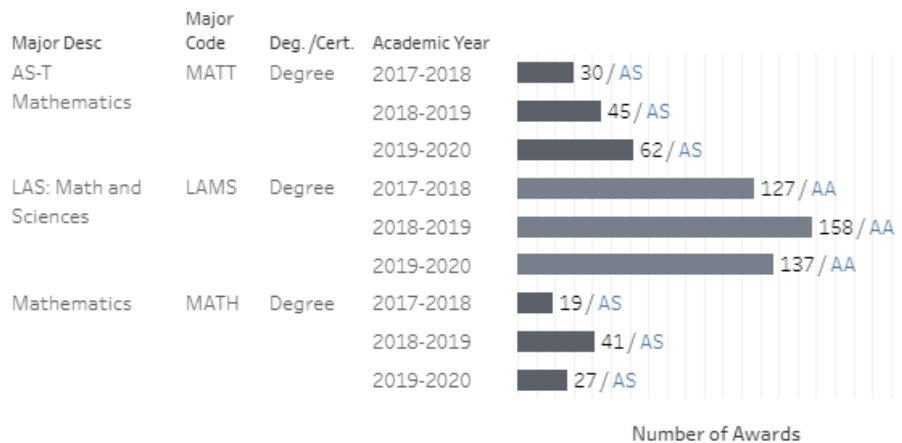
Enrollment and Number of Sections by *Modality* in MATH

	Instr. Method	2017-2018	2018-2019	2019-2020
Number of Sections	Online	26	24	3
	Other Indep Study	4	4	
	Traditional	691	602	425
Enrollment	Online	894	815	81
	Other Indep Study	8	4	
	Traditional	15,045	14,212	10,286

Enrollment and Number of Sections by *Location* in MATH

	Location	2017-2018	2018-2019	2019-2020
Number of Sections	Lancaster	671	568	361
	Lancaster [Off Campus]	6	6	12
	Palmdale	44	56	53
	Palmdale [Off Campus]			2
Enrollment	Lancaster	14,499	13,154	8,593
	Lancaster [Off Campus]	158	137	288
	Palmdale	1,290	1,740	1,432
	Palmdale [Off Campus]			54

Number of Degrees/Certificates Awarded in AS-T Mathematics (MATT), LAS: Math and Sciences (LAMS), Mathematics (MATH)



FTEF by Contract Type, Part-time/Full-time Ratio, FTES, FTES/FTEF in MATH

	Fall 2016	Fall 2017	Fall 2018	Fall 2019
PT/Adjunct	17.7	18.0	16.3	11.9
FT/Regular	18.0	21.9	20.3	22.2
FT/Overload	4.8	3.4	4.0	2.6
TOTAL FTEF	40.4	43.2	40.6	36.6
PT/FT	1.0	0.8	0.8	0.5
FTES	696.7	704.8	667.0	571.3
FTES/FTEF Ratio	17.2	16.3	16.4	15.6
WSCH/FTEF Ratio	517.2	489.0	492.7	468.3

Division/Area Name: MSE Division - Physical Science Area	For Years: 2021-2022
Name of person leading this review: Paul Stahmann	
Names of all participants in this review: Dr. Alex Schroer, Paul Stahmann, Kenneth Underwood	

Part 1. Program Overview:

<p><i>1.1. Briefly describe how the program contributes to the district mission:</i> The Physical Science courses provide the students of AVC with a quality science education within a positive and inclusive learning environment which is dedicated to developing student understanding and appreciation of the relevancy of the physical sciences. PSCI 101 is a general education course that combines physics and chemistry content and is mainly geared towards students who intent to become K-12 teachers. The curriculum includes a hands-on active-learning laboratory component designed to improve students' conceptual understanding and problem-solving ability. The PSCI 302 course has been designed to meet the needs of the AVC 4-year airframe manufacturing technology program. It is a required class that introduces students to a non-calculus quantitative understanding of the atmosphere through the study of atmospheric thermodynamics and dynamics.</p>	
<p><i>1.2. State briefly program highlights and accomplishments:</i> Some of the highlights involve the high success rates and retention rates. The success rate for Hispanic/Latinx students has increased from 83.3% (2016-17) to 89.3% (2019-20). The success rate for Black students has increased from 56% (2016-17) to 81% (2019-20). The success rate for White/Non-Hispanic students has increased from 86.7% (2016-17) to 97.8% (2019-20).</p>	
<p><i>1.3. Check each Institutional Learning Outcome (ILO) supported by the program.</i></p>	
<p>X <input type="checkbox"/> Communication</p>	<p>X <input type="checkbox"/> Demonstrates analytical reading and writing skills including research, quantitative and qualitative evaluation and synthesis. <input type="checkbox"/> Demonstrates listening and speaking skills that result in focused and coherent communications</p>
<p>X <input type="checkbox"/> Creative, Critical, and Analytical Thinking</p>	<p>X <input type="checkbox"/> Uses intellectual curiosity, judgment and analytical decision-making in the acquisition, integration and application of knowledge and skills. X <input type="checkbox"/> Solves problems utilizing technology, quantitative and qualitative information and mathematical concepts.</p>
<p><input type="checkbox"/> Community/Global Consciousness</p>	<p><input type="checkbox"/> Understands and applies personal concepts of integrity, ethics, self-esteem, lifelong learning, while contributing to the well-being of society and the environment. <input type="checkbox"/> Demonstrates an awareness and respect of the values of diversity, complexity, aesthetics and varied cultural expressions.</p>
<p><input type="checkbox"/> Career and Specialized Knowledge</p>	<p>X <input type="checkbox"/> Demonstrates knowledge, skills and abilities related to student educational goals, including career, transfer and personal enrichment.</p>
<p><i>1.4. Check each Educational Master Plan (EMP)/Strategic Plan Goal supported by the program.</i></p>	
<p>X Goal 1*: Commitment to strengthening institutional effectiveness measures and practices.</p>	
<p>X Goal 2*: Increase efficient and effective use of resources: Technology; Facilities; Human Resources; Business Services.</p>	
<p>X Goal 3: Focus on utilizing proven instructional strategies that will foster transferable intellectual skills.</p>	
<p>✓ Goal 4*: Advance more students to college-level coursework-Develop and implement effective placement tools.</p>	
<p>✓ Goal 5: Align instructional programs to the skills identified by the labor market.</p>	

*Indicates College-Wide Priorities for 2018-2021 as of fall, 2018.

Part 2.A. Please provide the results of any internal and external environmental scan information you have gathered related to the program e.g. surveys, interviews, focus groups, advisory groups, licensure exam scores, job placement, State mandates, etc.:

The satisfaction of students surveyed in our classes during the Fall semester of 2019 revealed that the majority felt somewhat or very satisfied with the content of the courses.

Part 2.B. Analyze the [program review data](#) (please see the [program review data retrieval instructions](#) and attach your program review data page with any other supporting documents), the above environmental scan information, and anything else related to your area to identify the program strengths, weaknesses, opportunities, & threats (SWOT):

Strengths	Success rates and retention rates have increased over the four-year period of 2016 – 2020. For example, retention rates have increased for Black students from 80% (2016-17) to 96.7% (2019-20). Sections taught at the Lancaster main campus generally are filled to capacity. The presence of a full-time physical science lab technician has been essential for the continued success of the area. The online teaching approach due to Covid-19 has been difficult for the labs but the instructors have been creative in delivering ways to teach the content
Weaknesses	Enrollment at the Palmdale Campus in PSCI classes has been low.
Opportunities	Provide students with the most up-to-date equipment and technology. Improve quality of laboratory exercises.
Threats	We have a fully equipped lab in the Palmdale campus with a full-time lab tech present, but enrollment has been consistently low. We need to intensify efforts (work with the AVC Public Relations office) to increase awareness of the availability of PSCI 101 in the Palmdale campus.

Part 2.C. Review and comment on progress towards SLO/PLO/OO Action Plans:

The SLO for the year was met or exceeded with a 92.9% rate. This is an excellent rate for students to have met and achieved the comprehension of many variables introduced in the lower level physical science course. The fact that 3 to 4 different full-time and adjunct faculty teach multiple sections per semester shows that the materials are being delivered and understood on a unified and consistent pattern.

Part 2.D. Review and comment on progress towards past program review goals:

Progress has been made in areas such as new equipment and new lab experiences for students. A full time physical science lab tech has been hired for the Palmdale campus and an additional lab tech has been hired in Lancaster to assist adjunct faculty during the night sections.

Part 3. Based on Part 2 above, please list program/area goals for 2020-2021:

<i>Program/Area Goal #</i>	<i>Goal supports which ILO/PLO/SLO/OO?</i>	<i>Description of Goal</i>	<i>Steps to be taken to achieve goal?</i>
Improve quality of laboratory exercises.	ILOs 1-4	Faculty continue to improve lab materials being used to teach physical science.	Extra time spent to improve lab materials. Consultation with other faculty.

Part 4. Resource Requests that Support Program Needs (Based on above analyses and listed in priority order):

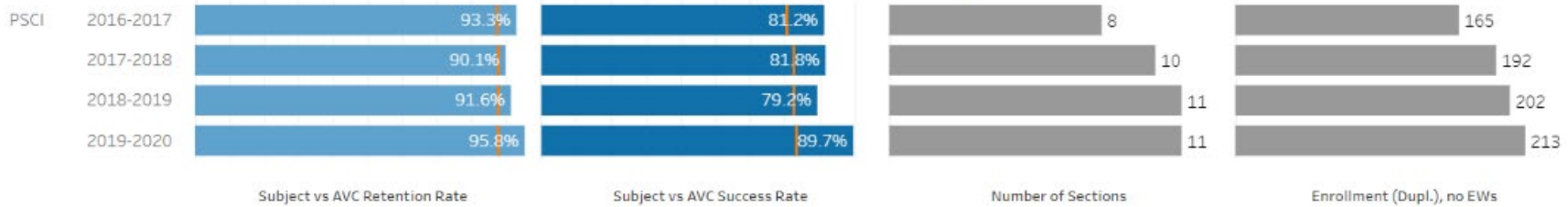
<i>Type of Resource Request</i>	<i>Summary of Request</i>	<i>New or Repeat Request</i>	<i>Amount of Request, \$</i>	<i>One-Time or Recurring Cost, \$</i>	<i>Contact's Name</i>
Faculty					
Classified Staff					
Technology	New laptops in the near future	New	~ \$12,000	One-time	Paul Stahmann, Alex Schroer
Technology	Support to host upper balloon based sounding effort for students to become familiar with data acquisition and analysis of the data.	New	approximately \$1,500	Recurring	Ken Underwood
Technology	AVC hosted trip to National Weather Service Office for class. Evening trip. Not sure of the cost. Must be coordinated with NWS office.	New		Recurring	Ken Underwood
Technology	NOAA / NWS presentations to class arranged by instructor and implemented through Zoom connection.	New	\$500	Recurring	Ken Underwood
Technology	Budget to support student participation at American Meteorological Society national meeting. Would be related to a student presentation at the meeting.	New	\$1,500	Recurring	Ken Underwood
Physical/Facilities					
Supplies	On-going budget to upgrade, replace, and acquire new equipment for the labs and demonstrations.	Repeat	Annual budget	Recurring	Paul Stahmann, Alex Schroer
Professional Development	Budget to attend national conferences where research and teaching ideas are shared.	New	\$2000	Annually	Paul Stahmann, Alex Schroer
Other					

Part 5. Insert your Program Review Data here, as well as any other supporting data. (See Part 2.B above.)

Please Select Subject area (twice) and Program Major(s) to get your data ---->

Select Subject: PSCI | Select Subject again: PSCI | Select Program Major(s): (Multiple values) | Academic Year: (Multiple values)

Retention, Success, Number of Sections, & Enrollment in PSCI (Total AVC rates are shown as | hover over to see data)



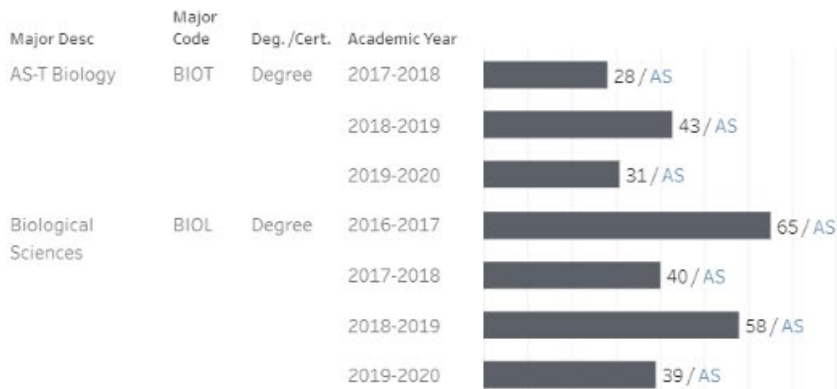
Enrollment and Number of Sections by Modality in PSCI

	Instr. Method	2016-2017	2017-2018	2018-2019	2019-2020
Number of Sections	Other Indep S..			1	1
	Traditional	8	10	10	10
Enrollment	Other Indep S..			4	1
	Traditional	165	192	198	216

Enrollment and Number of Sections by Location in PSCI

	Location	2016-2017	2017-2018	2018-2019	2019-2020
Number of Sections	Lancaster	8	9	9	9
	Palmdale		1	2	2
Enrollment	Lancaster	165	185	176	175
	Palmdale		7	26	42

Number of Degrees/Certificates Awarded in AS-T Biology (BIOT) & Biological Sciences (BIOL)



FTEF by Contract Type, Part-time/Full-time Ratio, FTES, FTES/FTEF in PSCI

	Fall 2016	Fall 2017	Fall 2018	Fall 2019
PT/Adjunct	0.8	0.6	1.0	1.0
FT/Regular	0.8	1.2	0.8	0.8
TOTAL FTEF	1.6	1.8	1.8	1.8
PT/FT	1.0	0.5	1.3	1.3
FTES	17.2	17.0	18.5	21.0
FTES/FTEF Ratio	10.7	9.5	10.3	11.7
WSCH/FTEF Ratio	322.3	283.8	308.8	350.5

Click [here](#)

Division/Area Name: MSE Division – Physics Department	For Years: 2021-2022
Name of person leading this review: Dr. Jason Bowen	
Names of all participants in this review: Dr. Jason Bowen, Dr. Chrysanthos Kyriakides, Dr. Mark McGovern, Paul Stahmann, Ken Underwood.	

Part 1. Program Overview:

1.1. Briefly describe how the program contributes to the district <u>mission</u>	
The physics program at Antelope Valley College (AVC) provides high quality education to a diverse population of students through a highly engaging lecture environment, stimulating laboratory activities with new and modern equipment, faculty participation in the STEM Club, faculty participation in undergraduate research projects, and program participation in the joint AVC/California State University Long Beach AV Engineering Program.	
1.2. State briefly program highlights and accomplishments	
For the 2019-2020 academic year, the success rate was 87.5% and the retention rate was 94.5%. Compared to the average success rates (82.9%) and retention rates (90.2%) for the three academic years from 2016-2017 to the 2018-2019, the program has experienced significant increases. It should also be noted that in each of the past four academic years retention and success rates in the Physics Program outperform the total success rates averaged over all programs at Antelope Valley College. The number of sections on offer has risen year-over-year during the past three academic years from 22 sections in the 2016-2017 academic year to 26 sections in the 2019-2020 academic year, where enrollment has increased from 537 students in the 2017-2018 academic year to 594 students in the 2019-2020 academic year. The Physics Program at Antelope Valley College has seen steady growth during the past four academic years.	
1.3. Check each <u>Institutional Learning Outcome (ILO)</u> supported by the program. Type an "X" if checkbox is unavailable.	
X Communication	X Demonstrates analytical reading and writing skills including research, quantitative and qualitative evaluation and synthesis. <input type="checkbox"/> Demonstrates listening and speaking skills that result in focused and coherent communications
X Creative, Critical, and Analytical Thinking	X Uses intellectual curiosity, judgment and analytical decision-making in the acquisition, integration and application of knowledge and skills. X Solves problems utilizing technology, quantitative and qualitative information and mathematical concepts.
X Community/Global Consciousness	X Understands and applies personal concepts of integrity, ethics, self-esteem, lifelong learning, while contributing to the well-being of society and the environment. <input type="checkbox"/> Demonstrates an awareness and respect of the values of diversity, complexity, aesthetics and varied cultural expressions.

X Career and Specialized Knowledge	X Demonstrates knowledge, skills and abilities related to student educational goals, including career, transfer and personal enrichment.
1.4. Check each <u>Educational Master Plan (EMP)/Strategic Plan Goal</u> supported by the program. Type an "X" if checkbox is unavailable.	
<input type="checkbox"/>	Goal 1*: Commitment to strengthening institutional effectiveness measures and practices.
X	Goal 2*: Increase efficient and effective use of resources: Technology; Facilities; Human Resources; Business Services.
X	Goal 3: Focus on utilizing proven instructional strategies that will foster transferable intellectual skills.
X	Goal 4*: Advance more students to college-level coursework-Develop and implement effective placement tools.
X	Goal 5: Align instructional programs to the skills identified by the labor market.

*Indicates College-Wide Priorities for 2019-2020

Part 2.A. Please provide the results of any internal and external environmental scan information you have gathered related to the program e.g. surveys, interviews, focus groups, advisory groups, licensure exam scores, job placement, State mandates, etc.:

The joint AVC/CSULB AV Engineering Program offers CSULB Bachelor's Degrees in electrical and mechanical engineering. In the academic years 2016-2017 through 2018-2019 a total of 108 students were accepted of which 85 were AVC transfer students. 79 of these students graduated. In summary 79% of the students accepted into AV Engineering Program during these years were AVC transfer students and the graduation rate was 93%. A total of 55 students were accepted in the recent 2019-2020 and 2020-2021 cohorts of which 46 are AVC transfer students or 84% of the total. Graduation dates for these cohorts are in Dec 2021 and Dec 2022.

Part 2.B. Analyze the program review data (please see the program review data retrieval instructions and attach your program review data page with any other supporting documents), the above environmental scan information, and anything else related to your area to identify the program strengths, weaknesses, opportunities, & threats (SWOT):

Strengths	Improved overall retention and success rates (94.8% and 87.5%, respectively, for the current Program Review cycle). Improved parity in female and male success rates (+13.5% and +15.2% PPG, respectively). 24% increase in awarded AS-T Physics degrees in the 2019-2020 academic year over the prior year; 194% increase in the current period over the 2016-2017 academic year. 10% increase in enrollment in the 2019-2020 academic year and 18% increase in the number of sections offered over the 2016-2017 academic year.
Weaknesses	Disparity in Disproportionate Impact (as measured by PPG) between African American/Black and White Non-Hispanic students: 9.4% and 11.1%, respectively, vs 19.4% for White Non-Hispanic students.
Opportunities	Improve parity in PPG across all demographics.
Threats	SARS-CoV-2 pandemic may depress enrollments and reverse gains. May also have an adverse effect on retention and success rates especially with regards to more financially and socially vulnerable student populations.

Part 2.C. Review and comment on progress towards SLO/PLO/OO Action Plans:

Past Action Plans have emphasized greater focus on targeting the underlying conceptual understanding students must develop to succeed. A greater emphasis has been placed on classroom discussion of conceptual ideas and accessing in real-time during classroom

discussions student conceptual understanding of current topics and adjusting instruction to address student understanding. Additionally, more homework activities of a conceptual nature have been administered. Focus on laboratory activities were adjusted in the last couple of years in response to SLO data showing that students were not comprehending the principles and processes involved in collecting data and analyzing it. Emphasis has also been placed on data analysis. Adjustments to lab activities to help students with the process of collecting data, understanding error analysis, and how to visually represent the data when it is deemed important were made. These measures have proved successful according to retention and success rates. At the present time SLO data indicates students are encountering difficulty developing proficiency in the use of terminology and language in engaging with the material presented. Two issues then need to be addressed and are discussed in the current action plans: (1) how to improve student success in these areas, and (2) identify the cause for the worsening performance indicated by the SLO data. Related to (2) is the fact that worsening COVID-19 conditions necessitated a sudden transition to a purely online learning environment mid-spring and created employment and related financial challenges, and technological challenges for our students. Necessary actions have been identified along these lines: (1) Faculty will collaborate to discuss effective teaching strategies and the use of visual aids including in-class demonstrations and online tools and software to improve the qualitative understanding of the concepts presented in class. (2) Success rates will be monitored in the 2020-2021 academic year to assess the impact of the switch to online learning, and also the deleterious effects of the current environmental challenges including COVID-19 and the California wildfires in the 2020 fire season. Also, faculty will meet to discuss and plan a survey asking such questions as (but not limited to): Is your internet service reliable? What device do you use to meet with your class online? etc., and also to discuss solutions to technological issues students may face including lack of access to WiFi hotspots and sufficient computing resources to succeed in a prolonged online environment. These efforts are ongoing however given the current climate there is considerable uncertainty and progress in these areas may be limited in the current climate. Nonetheless some of the above challenges have been mitigated by identifying students with need of computing resources and internet access and directing them to the appropriate departments to receive WiFi hotspots and Chromebooks, and despite the challenging online environment one advantage is the immediate availability of animation tools and videos that significantly enhance students' conceptual and visual understanding of the course material.

Part 2.D. Review and comment on progress towards past program review goals:

The goals established in the prior Program Review cycle was to realize a 10% annual year-over-year annual increase in the number of awarded AS-T degrees in Physics and increase retention and success rates. The most recent year-over-year change in the number AS-T degrees was an increase of 24% in number of degrees awarded. Year-over-year retention and success rates improved 4.4% and 3.75, respectively.

Part 3. Based on Part 2 above, please list program/area goals for 2020-2021:

<i>Program/Area Goal #</i>	<i>Goal supports which ILO/PLO/SLO/OO?</i>	<i>Description of Goal</i>	<i>Steps to be taken to achieve goal?</i>
2	1,2	Continued use of real-time assessment methods.	Classroom implementation; ongoing
1	3	Increase in retention and success rates observed.	Ongoing
4	3,4	The most recent year-over-year	Achieved over prior academic year

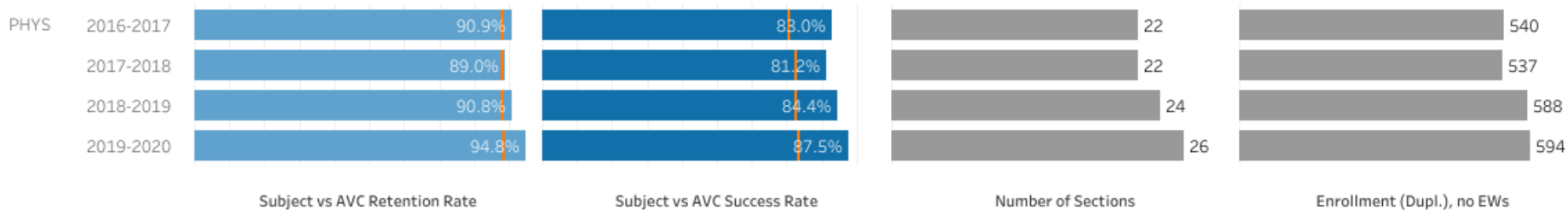
	change was an increase of 24% in number of degrees awarded.	
--	--	--

Part 4. Resource Requests that Support Program Needs (Based on above analyses and listed in priority order):

Type of Resource Request	Summary of Request	New or Repeat Request	Amount of Request, \$	One-Time or Recurring Cost, \$	Contact's Name
Faculty	Additional adjunct faculty	Repeat	See HR	Recurring	Dr. Jason Bowen
Classified Staff					
Technology	Video and imaging editing software licenses; video capture equipment; additional Mathematica software licenses	New	10000.00	One-Time	Dr. Mark McGovern
Physical/Facilities					
Supplies	1 gallon (4L) of ethanol 95% (2x), e/m apparatus (coils) (3x), e/m apparatus (tubes) (3x), pulley cord (12x), dual range force sensors (6x), digital thermometers (6x), electronic balances (6x)	New	10000.00	One-Time	Dr. Chrysanthos Kyriakides
Professional Development	Conferences including registration and travel	Repeat	10000.00	Recurring	Dr. Jason Bowen
Other					

Part 5. Insert your Program Review Data here, as well as any other supporting data. (See Part 2.B above.)

Retention, Success, Number of Sections, & Enrollment in PHYS (Total AVC rates are shown as | hover over to see data)



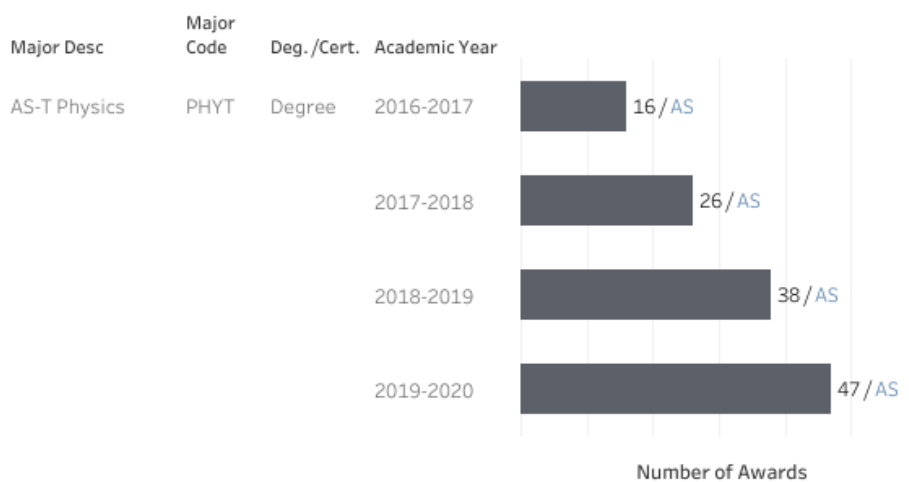
Enrollment and Number of Sections by *Modality* in PHYS

	Instr. Method	2016-2017	2017-2018	2018-2019	2019-2020
Number of Sections	Traditional	22	22	24	26
Enrollment	Traditional	540	537	588	607

Enrollment and Number of Sections by *Location* in PHYS

	Location	2016-2017	2017-2018	2018-2019	2019-2020
Number of Sections	Lancaster	22	22	24	26
Enrollment	Lancaster	540	537	588	607

Number of Degrees/Certificates Awarded in AS-T Physics (PHYT)

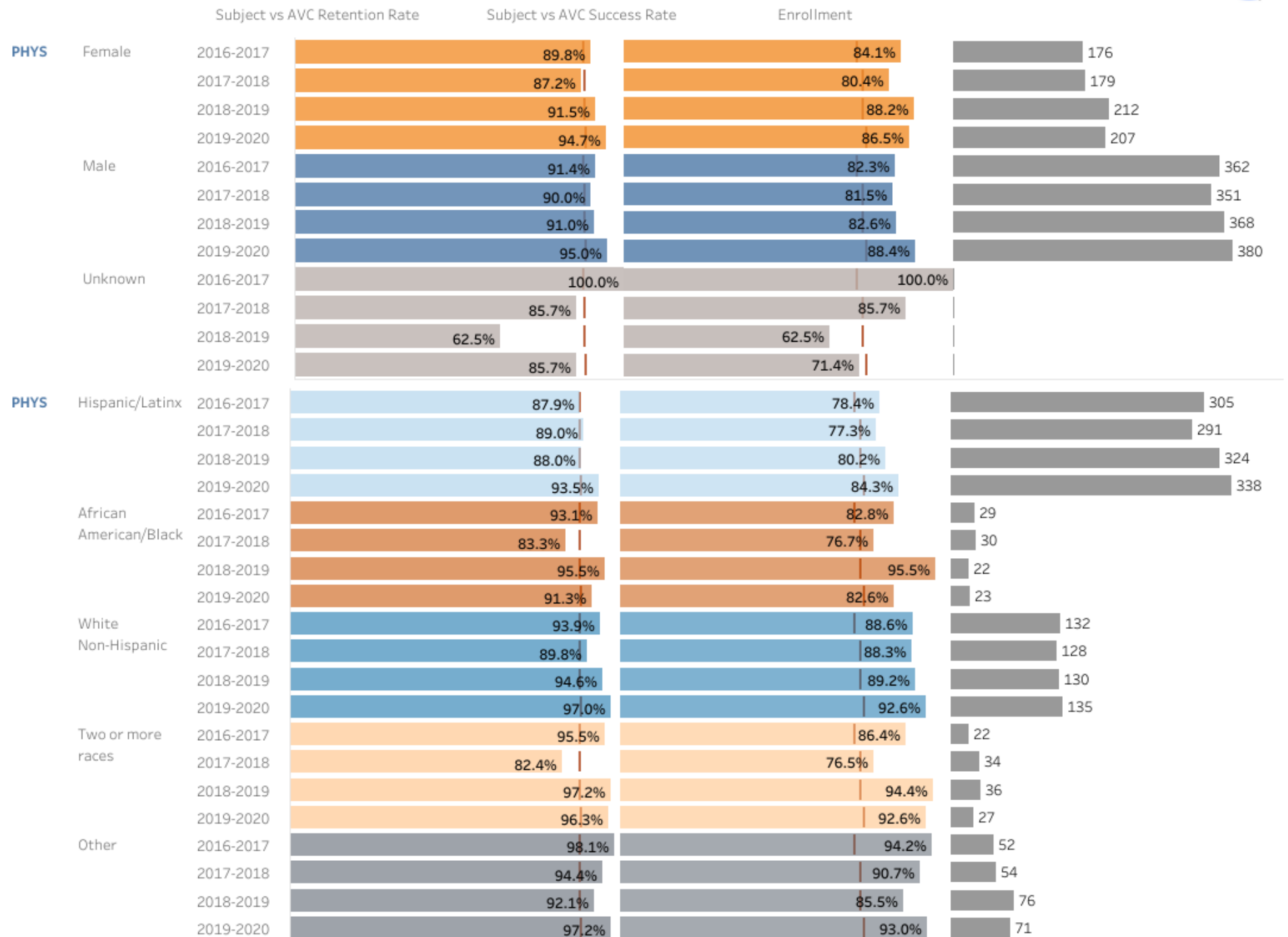


FTEF by Contract Type, Part-time/Full-time Ratio, FTES, FTES/FTEF in PHYS

	Fall 2016	Fall 2017	Fall 2018	Fall 2019
PT/Adjunct				0.4
FT/Regular	2.5	2.5	2.5	2.7
FT/Overload	1.0	1.0	1.0	1.2
TOTAL FTEF	3.5	3.5	3.5	4.3
PT/FT		0.0	0.0	0.1
FTES	47.7	44.4	49.8	53.0
FTES/FTEF Ratio	13.8	12.8	14.4	12.2
WSCH/FTEF Ratio	412.8	383.8	430.6	367.2

Click [here](#) to see AVC's Program awards dashboard

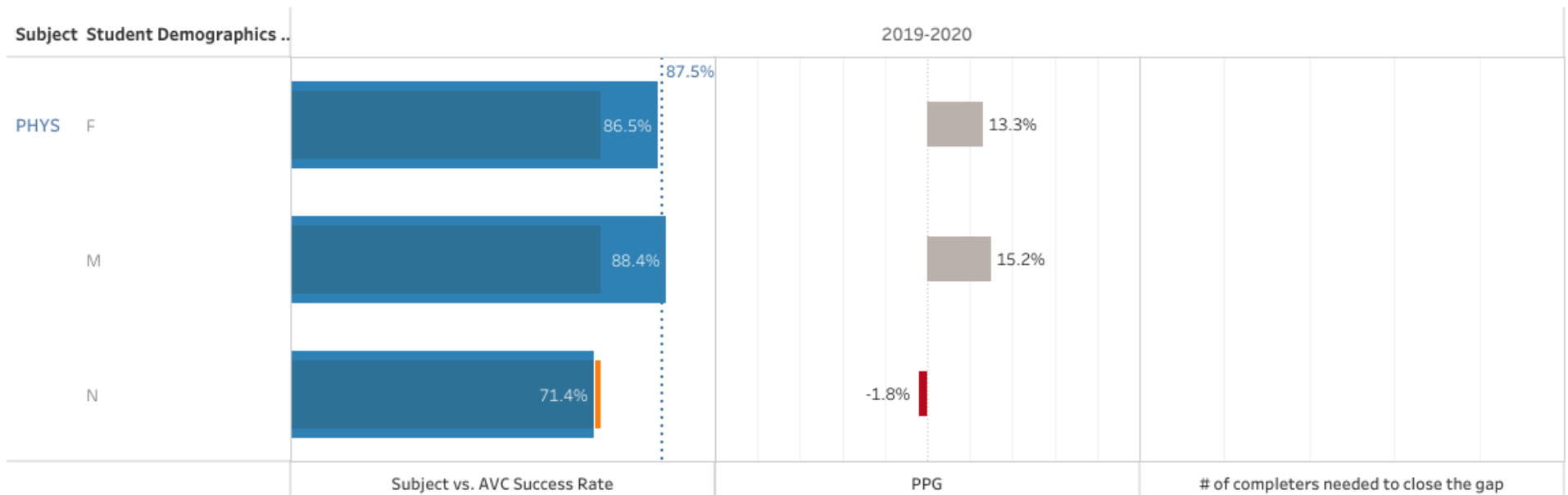
Subject-Level Retention, Success, and Enrollment by Gender & Race/Ethnicity as Compared to AVC's Rates (I)





2019-2020 Disproportionate Impact as Percentage Point Gap (PPG)

Blue Bars show Success Rate (SR) within the sub-Groups vs. AVC Annual SR (orange bar) vs. PHYS Annual SR (dotted line)



In 2019-2020, PHYS's Success Rate was 87.5% vs. AVC's Annual rate of 73.2%

Overall Disproportionate Impact as percentage point gap was : 14.3%

In PHYS, 594 was the enrollment count (duplicated headcount) (only shows if $n > 10$)

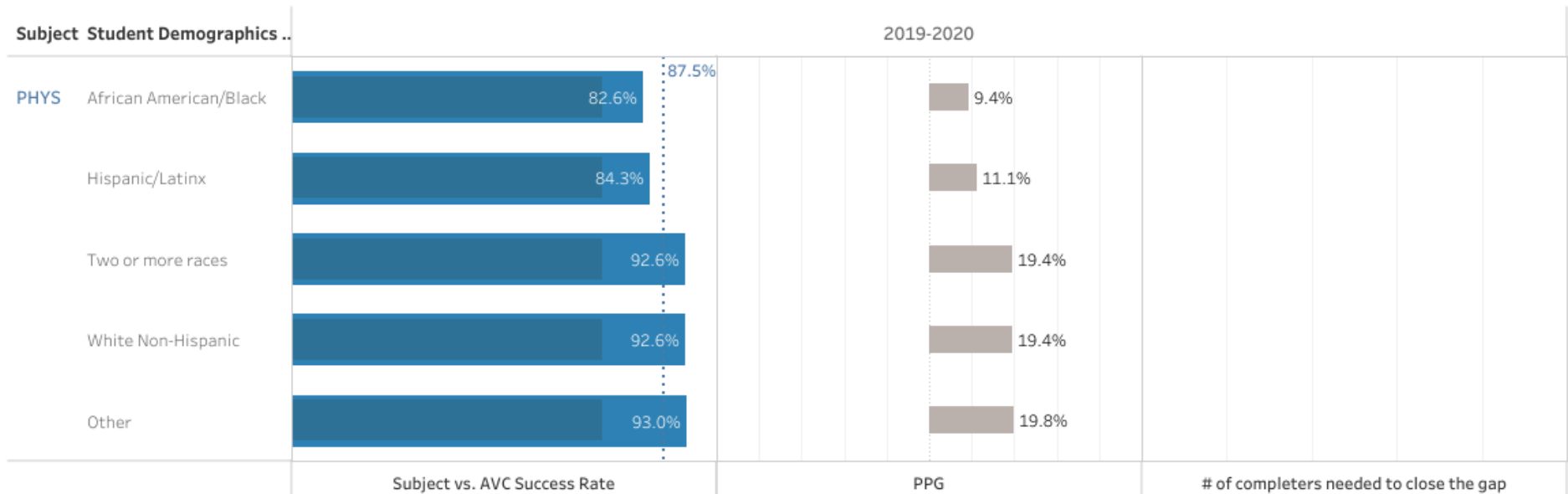
If there is a Disproportionate impact (PPG is negative), multiply the absolute value of PPG by the number of students and divide it by 100 to determine how many more successful completers would eliminate the gap.

(For example, $(594 * |14.3\%|)=85$. it means that 85 more successful course completers would help close the gap for this subject area)



2019-2020 Disproportionate Impact as Percentage Point Gap (PPG)

Blue Bars show Success Rate (SR) within the sub-Groups vs. AVC Annual SR (orange bar) vs. PHYS Annual SR (dotted line)



In 2019-2020, PHYS's Success Rate was 87.5% vs. AVC's Annual rate of 73.2%

Overall Disproportionate Impact as percentage point gap was : 14.3%

In PHYS, 594 was the enrollment count (duplicated headcount) (only shows if $n > 10$)

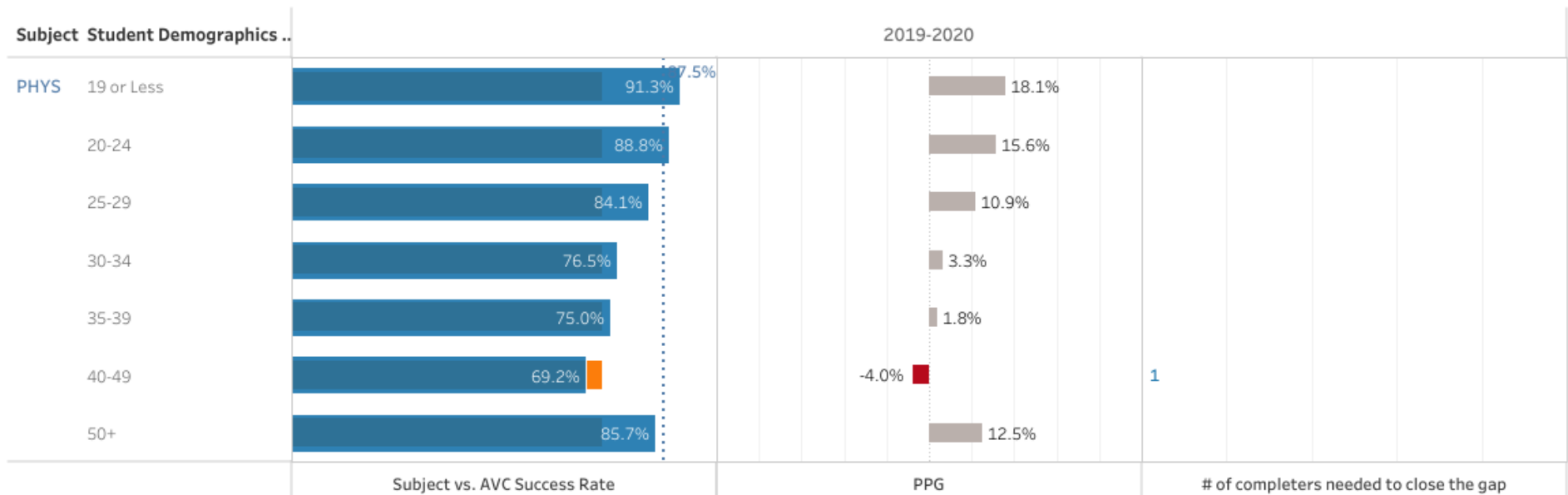
If there is a Disproportionate impact (PPG is negative) , multiply the absolute value of PPG by the number of students and divide it by 100 to determine how many more successful completers would eliminate the gap.

(For example, $(594 * |14.3\%|)=85$. it means that 85 more successful course completers would help close the gap for this subject area)



2019-2020 Disproportionate Impact as Percentage Point Gap (PPG)

Blue Bars show Success Rate (SR) within the sub-Groups vs. **AVC Annual SR (orange bar)** vs. **PHYS Annual SR (dotted line)**



In 2019-2020, **PHYS's Success Rate was 87.5%** vs. **AVC's Annual rate of 73.2%**

Overall Disproportionate Impact as percentage point gap was : **14.3%**

In **PHYS**, **594** was the enrollment count (duplicated headcount) (only shows if $n > 10$)

If there is a Disproportionate impact (**PPG is negative**), multiply the absolute value of PPG by the number of students and divide it by 100 to determine how many more successful completers would eliminate the gap.

(For example, $(594 * |14.3\%|)=85$. it means that 85 more successful course completers would help close the gap for this subject area)

Division/Area Name: MSE Division-Water Treatment	For Years: 2021-2022
Name of person leading this review: Toby Taube	
Names of all participants in this review: Toby Taube, Christos Valiotis	

Part 1. Program Overview:

1.1. Briefly describe how the program contributes to the district <u>mission</u>	
The Water Treatment courses prepare students for various grade level water treatment and /or distribution examinations administered by the California State Water Resources Control Board. Specific courses may be used as secondary courses required for specialized training or for students who wish to enter or who are already employed in the water treatment and water distribution fields, as defined by the California State Water resources Control Board. This is in line with the districts mission of offering workforce programs, job preparation courses (non-degree applicable) and a variety of services that contribute to the educational and economic well-being of the community.	
1.2. State briefly program highlights and accomplishments	
1.3. Check each <u>Institutional Learning Outcome (ILO)</u> supported by the program. Type an "X" if checkbox is unavailable.	
<input type="checkbox"/> Communication	<input type="checkbox"/> Demonstrates analytical reading and writing skills including research, quantitative and qualitative evaluation and synthesis. <input type="checkbox"/> Demonstrates listening and speaking skills that result in focused and coherent communications
<input checked="" type="checkbox"/> Creative, Critical, and Analytical Thinking	<input type="checkbox"/> Uses intellectual curiosity, judgment and analytical decision-making in the acquisition, integration and application of knowledge and skills. <input checked="" type="checkbox"/> Solves problems utilizing technology, quantitative and qualitative information and mathematical concepts.
<input type="checkbox"/> Community/Global Consciousness	<input type="checkbox"/> Understands and applies personal concepts of integrity, ethics, self-esteem, lifelong learning, while contributing to the well-being of society and the environment. <input type="checkbox"/> Demonstrates an awareness and respect of the values of diversity, complexity, aesthetics and varied cultural expressions.
<input checked="" type="checkbox"/> Career and Specialized Knowledge	<input checked="" type="checkbox"/> Demonstrates knowledge, skills and abilities related to student educational goals, including career, transfer and personal enrichment.
1.4. Check each <u>Educational Master Plan (EMP)/Strategic Plan Goal</u> supported by the program. Type an "X" if checkbox is unavailable.	
<input type="checkbox"/> Goal 1*: Commitment to strengthening institutional effectiveness measures and practices.	

<input checked="" type="checkbox"/> Goal 2* : Increase efficient and effective use of resources: Technology; Facilities; Human Resources; Business Services.
<input type="checkbox"/> Goal 3 : Focus on utilizing proven instructional strategies that will foster transferable intellectual skills.
<input type="checkbox"/> Goal 4* : Advance more students to college-level coursework-Develop and implement effective placement tools.
<input checked="" type="checkbox"/> Goal 5 : Align instructional programs to the skills identified by the labor market.

*Indicates College-Wide Priorities for 2019-2020

Part 2.A. Please provide the results of any internal and external environmental scan information you have gathered related to the program e.g. surveys, interviews, focus groups, advisory groups, licensure exam scores, job placement, State mandates, etc.:

In previous years we could determine the number of students that have completed a class and compare it to the published state list of certified treatment operators and or certified distribution operators. Unfortunately, due to COVID-19, the State has postponed the spring and fall of 2020 test dates.

Data from previous years does not provide the number of students that may have taken the exam and failed. Earliest data is from the Spring of 2019. The earliest they could have taken a State exam and the results to be published was late fall of 2019. Data may be skewed due to students taking the class for reasons such as preparing for a higher-grade certification or gathering Continuing education hours to renew a certification. In either case they already are certified operators. Another item that may skew the data is the home city of the operator on the published list. The name and home city are the only two points of information for us to determine if they were a student. Same first and last names, or if the student has moved out of the area may be other data issues.

The following is a list by semester of the number of students that successfully completed the course and currently are certified operators.
 Distribution: Spring 2019 Distribution, 10 students passed, 6 are certified; Fall 2018 Distribution, 9 students passed, 6 are certified; Spring 2018, 5 passed, 1 is certified; Fall 2017, 12 passed, 10 are certified; Spring 2017, 7 passed, 1 is certified; Fall of 2016, 9 passed, 6 are certified. The five semesters of data show 52 students successfully completed the class, 30 of those currently hold a certification

Part 2.B. Analyze the [program review data](#) (please see the program review data retrieval instructions and attach your program review data page with any other supporting documents), the above environmental scan information, and anything else related to your area to identify the program strengths, weaknesses, opportunities, & threats (SWOT): The program offers five course sections taught by three adjunct instructors who are employees of local water agencies. The total enrollment per year varies between 60 to 100 students. The purpose of those courses is to prepare students for a state licensure exam and the variation of enrollment is a function of the local need for employees. In reviewing student longitudinal data (academic years 2014-15 to 2017-18) we observe that the overall retention rate has remained constant at over 80%. However, there has been a decline in success rates from about 65% (on average) in 2014-15 and 2015-16, to 44% in 2017-18 before it bounced back again up to 52% in 2017-18.

Strengths	By taking only three classes the students can prepare for the various grade-level water treatment and/or distribution examinations administered by the California State Water Resources Control Board. Certifications are required by the Safe Drinking Water Act for anyone that operates distribution and/or treatment systems, that may affect water quality. Generally, this applied to every field employee other that entry level positions
------------------	---

Weaknesses	The program is not well advertised, and it can benefit from a FT faculty supervision. Advertising directly to local water agencies via an email list may be a way to make direct contacts and target an already known audience.
Opportunities	Hiring a FT chemistry instructor that can teach and supervise this program
Threats	Any program taught with only adjuncts cannot really grow. At the same time, enrollment might not justify a full-time position.

Part 2.C. Review and comment on progress towards SLO/PLO/OO Action Plans:

During the fall semester of 2019 the Water Distribution class had 3 SLO's listed. The overall success rate was 75% . The success rate ranged from a low of 55% to a high of 94%. Four were below 60%, five were above. The Spring 2020 semester switched to on line instruction after COVID-19 restrictions were implemented. The overall success rate increased to 89%. Nine were above 60%, none were below. I infer that the jump in grades was due to the online testing process. Once we return to in class instruction, we may be able to increase our effectiveness by having a designated tutor or teachers aid in the learning center that has direct contact with instructors. Referring students to the learning center in the past has had mixed results for students seeking assistance. Then early referring students to the learning center for assistance. Other choices may be by adding a weekly study group or tutoring session on campus.

Part 2.D. Review and comment on progress towards past program review goals:

Part 3. Based on Part 2 above, please list program/area goals for 2020-2021:

Program/Area Goal #	Goal supports which ILO/PLO/SLO/OO?	Description of Goal	Steps to be taken to achieve goal?
Capture community interest	ILO: 4,7	Educate public/schools	Participate in community expo's.
Capture water agency interest	ILO: 4,7	Coordinate training with water agencies	Conduct meetings and present course information
Outreach	ILO: 4,7	Raise awareness for the benefits of water-related jobs/education	Promotional brochures, attend community functions, coordinate with local LEAs.

Part 4. Resource Requests that Support Program Needs (Based on above analyses and listed in priority order):

Type of Resource Request	Summary of Request	New or Repeat Request	Amount of Request, \$	One-Time or Recurring Cost, \$	Contact's Name
Faculty	Full Time Faculty	New	\$100,000	recurring	C. Valiotis
Classified Staff	N/A				
Technology	N/A				
Physical/Facilities	N/A				
Supplies	N/A				
Professional Development	N/A				

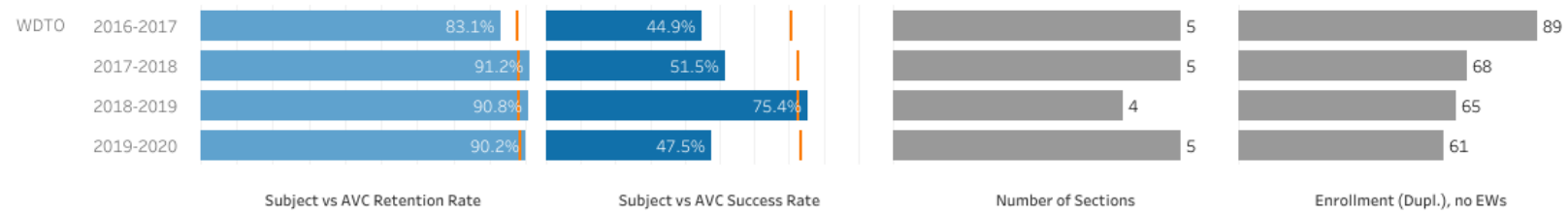
Other	N/A			
--------------	-----	--	--	--

Part 5. Insert your Program Review Data here, as well as any other supporting data. (See Part 2.B above.)

Please Select **Subject** area (twice) and **Program Major(s)** to get your data --->

Select Subject WDTO	Select Subject again WDTO	Select Program Major(s) Multiple values	Academic Year Multiple values	
------------------------	------------------------------	--	----------------------------------	--

Retention, Success, Number of Sections, & Enrollment in **WDTO** (Total AVC rates are shown as | hover over to see data)



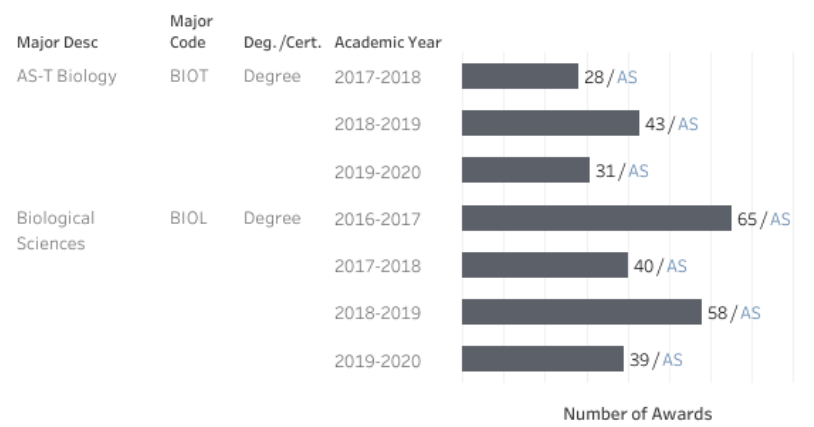
Enrollment and Number of Sections by **Modality** in **WDTO**

	Instr. Method	2016-2017	2017-2018	2018-2019	2019-2020
Number of Sections	Traditional	5	5	4	5
Enrollment	Traditional	89	68	65	66

Enrollment and Number of Sections by **Location** in **WDTO**

	Location	2016-2017	2017-2018	2018-2019	2019-2020
Number of Sections	Lancaster	5	5	4	5
Enrollment	Lancaster	89	68	65	66

Number of Degrees/Certificates Awarded in **AS-T Biology (BIOT) & Biological Sciences (BIOL)**



FTEF by Contract Type, Part-time/Full-time Ratio, FTES, FTES/FTEF in **WDTO**

	Fall 2016	Fall 2017	Fall 2018	Fall 2019
PT/Adjunct	0.4	0.4	0.2	0.4
FT/Regular				
TOTAL FTEF	0.4	0.4	0.2	0.4
PT/FT				
FTES	3.2	4.8	2.1	3.8
FTES/FTEF Ratio	8.1	11.9	10.4	9.6
WSCH/FTEF Ratio	241.5	357.8	310.5	288.0

Click [here](#) to see AVC's Program awards dashboard