

Academic Program Review - Biological/Life Sciences - 2024 Cycle Latest Version

Academic Program Review: (1) Overview of the program : Version by Marsh, Katherine on 12/01/2025 08:37

Provide a brief narrative description of the current program, including the program's mission statement and the students it serves.

The Life Science program is designed to prepare students interested in progressing to the nursing and allied health careers, entering the workforce in the field of biotechnology, and/or those interested in transferring to four-year colleges or universities. Our program goal is to build up the students' understanding of biological principles, structure, function of living organisms, and the interactions with the physical aspects of the environment. The scope of the program includes the fields of biology, anatomy, physiology, environmental biology, biotechnology, and microbiology.

The Mission of the Life Science Program is to offer quality educational opportunities for students by providing courses leading to certificates and associate degrees including courses that meet general education requirements. This program accomplishes its mission by continuing optimal academic standards, guaranteeing availability of academic & student support services, providing facilities to support teaching and learning, and supporting professional development for faculty.

The Life Science program fulfills three educational roles for students:

1. providing general education options for non-majors,
2. offering lower division courses for life science majors, and
3. preparing students for entry into various health-related fields and programs.

Describe the degrees and/or certificates offered by the program.

The program offers courses that satisfy the General Education requirements for students to obtain either an Associate of Arts (A.A.) degree in General Studies with a Biological and Physical Sciences Emphasis or an Associate in Science (A.S.) degree in General Sciences. Many of the Life Sciences courses fulfill the requirement of transfer institutions including California State University (CSU) and the University of California (UC) systems for a science course with a laboratory section. Furthermore, many of the courses in the Life Sciences program satisfy prerequisite course requirements for students who will transfer and major in biology, botany, zoology, microbiology, molecular biology, anatomy, physiology, nursing, allied health, pre-dentistry, pre-veterinary, or pre-medicine. Students in this program may graduate with an A.S. or A.A. degree.

This program also offers a Biotechnology Laboratory Assistant Certificate of Achievement, a Biomanufacturing Technician Certificate of Achievement, and an A.S. in Biomanufacturing.

Explain how the program fulfills the College's mission and aligns with the strategic initiatives.

The Life Sciences Program is aligned with the Mission statement because we have established a welcoming and inclusive community in our program. Our program provides clear pathways for completion. The program is aligned with the Strategic Initiatives. Our degree program meets the needs of our students in terms of our course offerings, many of whom want to pursue careers in allied health and/or transfer to a four-year college or university. This department has developed guided pathways for our degrees so that students will have a clear path to completion. Our program offers quality educational programs tailored to our diverse student community. Also, the Life Science faculty developed and utilized various assessment tools to monitor stated Student Learning Outcomes (SLO) and the faculty have trained to enter the data in Nuventive, a college-wide online repository of SLO results. The faculty have strengthened the student success efforts by adding supplemental instruction and collaborating with the Learning Resource Center to track Learning Outcomes.

Life science department has media projectors and whiteboards installed in all classrooms and campus-wide Wi-Fi network for instruction and class activities. The Faculty actively develops relationships with high schools, colleges, businesses, and community-based organizations to help collaborate on ways to improve Learning Outcomes. The faculty and students of the Life Science program are involved in campus-wide social programs such as celebrating different cultural and historical activities which include Martin Luther King Day, Cesar Chavez Day, Cinco de Mayo, Black History Month observance, musical presentations, and cultural exhibits.

Discuss the status of recommendations from your previous program review.

The recommendations which included materials required to meet our Student Learning Outcomes (SLO's) in our courses have been purchased (e.g. purchase dissection specimens and other consumables, microscope repair, etc.). The unfunded recommendations in the previous program review have been included in this program review as those are still needed in addition to new needs that have arisen.

Academic Program Review: (2) Analysis of Research Data : Version by Marsh, Katherine on 12/01/2025 11:18

Head Count: Identify and explain trends in enrollment. Analyze enrollment demographic variables, including gender, ethnicity, age, educational goal and full-time/part-time status.

This section contains the analysis of data provided by Institutional Research from Fall 2019 to Spring 2023.

a) Head Count of Student in the Life Science Program

The head count shows a steady decrease of students in all life science courses in 2019 - 2023. Since other local colleges are limited in their capacity to offer these in-demand courses, many students come from outside of our district to take advantage of the classes we offer. This decrease may be explained by the abrupt disruption due to the Covid-19 pandemic which resulted in decreasing head count.

Gender	Fall '19	Fall '20	Fall '21	Fall '22	Fall '23
Man	25% (213)	22% (178)	23% (126)	27% (124)	24% (128)
Unknown/Non-Respondent	3% (25)	1% (8)	1% (8)	1% (6)	6% (31)
Woman	72% (625)	77% (626)	76% (424)	71% (324)	70% (369)
Grand Total	100% (863)	100% (812)	100% (558)	100% (454)	100% (528)

Gender	Spring '20	Spring '21	Spring '22	Spring '23
Man	25% (200)	19% (137)	26% (133)	29% (142)
Unknown/Non-Respondent	3% (26)	1% (10)	1% (7)	2% (9)
Woman	72% (573)	80% (581)	72% (363)	69% (331)
Grand Total	100% (799)	100% (728)	100% (503)	100% (482)

Ethnicity	Fall '19	Fall '20	Fall '21	Fall '22	Fall '23
American Indian ..	0% (<5)	0% (<5)	0% (<5)		
Asian	9% (81)	5% (44)	8% (44)	3% (14)	4% (20)
Black or African ..	23% (197)	25% (199)	21% (115)	21% (96)	25% (134)
Latinx	55% (472)	58% (469)	59% (331)	67% (303)	60% (316)
Native Hawaiian..	0% (<5)	1% (8)	1% (5)	0% (<5)	0% (<5)
Unknown/Non-R..	10% (90)	9% (71)	9% (48)	7% (32)	9% (48)
White	2% (19)	2% (20)	2% (13)	2% (7)	2% (9)
Grand Total	100% (863)	100% (812)	100% (558)	100% (454)	100% (528)

Ethnicity	Spring '20	Spring '21	Spring '22	Spring '23
American Indian ..	0% (<5)	0% (<5)		
Asian	6% (48)	8% (55)	5% (23)	4% (17)
Black or African ..	23% (182)	23% (167)	24% (120)	24% (117)
Latinx	56% (449)	57% (418)	61% (309)	63% (304)
Native Hawaiian..	1% (8)	1% (5)	1% (6)	0% (<5)
Unknown/Non-R..	11% (89)	9% (64)	7% (33)	7% (36)
White	3% (21)	2% (17)	2% (12)	1% (7)
Grand Total	100% (799)	100% (728)	100% (503)	100% (482)

Age Group	Fall '19	Fall '20	Fall '21	Fall '22	Fall '23
Under 18	2% (15)	3% (25)	8% (43)	11% (50)	10% (52)
18 to 24	44% (379)	42% (344)	37% (207)	41% (186)	38% (203)
25 to 29	24% (205)	20% (162)	22% (125)	14% (65)	17% (90)
30 to 39	18% (158)	25% (203)	21% (119)	23% (104)	23% (121)
40 to 49	6% (55)	8% (62)	8% (45)	7% (32)	9% (50)
50+	4% (31)	2% (14)	3% (16)	3% (15)	2% (9)
Unknown/Non-Re..	2% (20)	0% (<5)	1% (<5)	0% (<5)	1% (<5)
Grand Total	100% (863)	100% (812)	100% (558)	100% (454)	100% (528)

Age Group	Spring '20	Spring '21	Spring '22	Spring '23
Under 18	1% (7)	0% (<5)	8% (41)	5% (24)
18 to 24	43% (342)	40% (288)	36% (182)	43% (208)
25 to 29	23% (184)	23% (166)	25% (126)	19% (92)
30 to 39	20% (162)	23% (170)	21% (104)	20% (96)
40 to 49	8% (60)	11% (78)	6% (31)	9% (44)
50+	3% (24)	3% (19)	3% (16)	3% (16)
Unknown/Non-Re..	3% (20)	1% (<5)	1% (<5)	0% (<5)
Grand Total	100% (799)	100% (728)	100% (503)	100% (482)

Class Load	Fall '19	Fall '20	Fall '21	Fall '22	Fall '23
Full-time	12% (101)	18% (146)	16% (92)	20% (92)	16% (86)
Part-time	88% (762)	82% (666)	84% (466)	80% (362)	84% (442)
Grand Total	100% (863)	100% (812)	100% (558)	100% (454)	100% (528)

Class Load	Spring '20	Spring '21	Spring '22	Spring '23
Full-time	16% (131)	20% (148)	15% (73)	21% (100)
Part-time	84% (668)	80% (580)	85% (430)	79% (382)
Grand Total	100% (799)	100% (728)	100% (503)	100% (482)

Educational Goal	Fall '19	Fall '20	Fall '21	Fall '22	Fall '23
Intend to Transfer	24% (209)	15% (118)	9% (49)	92% (416)	
Degree/Cert Only	4% (33)	3% (22)	3% (15)	1% (<5)	
Retrain/Recertify	2% (18)	0% (<5)	0% (<5)		
Basic Skills	0% (<5)	0% (<5)		0% (<5)	
Enrichment	63% (546)	79% (641)	82% (457)	2% (7)	
Undecided/Unstated	6% (52)	3% (28)	6% (35)	6% (27)	
NA	0% (<5)				100% (528)
Grand Total	100% (863)	100% (812)	100% (558)	100% (454)	100% (528)

Educational Goal	Spring '20	Spring '21	Spring '22	Spring '23
Intend to Transfer	22% (172)	11% (77)	6% (28)	93% (447)
Degree/Cert Only	3% (21)	2% (12)	2% (9)	0% (<5)
Retrain/Recertify	2% (14)	0% (<5)		0% (<5)
Basic Skills	0% (<5)			0% (<5)
Enrichment	69% (553)	85% (622)	90% (451)	1% (<5)
Undecided/Unstated	5% (37)	2% (16)	3% (15)	6% (28)
Grand Total	100% (799)	100% (728)	100% (503)	100% (482)

Gender: Females outnumbered males in the Life Science program by approximately 2:1. In 2023, the percentage of the number of females in the Life Science program was 18.20%, whereas the male student's enrollment was 12.81%. While the ratio of female to male remained fairly constant, the overall trend is an increase in student counts over time. Notably, the Life Science program has a disproportionately higher number of female students than male students when compared to the campus student number (64.60% female, 35.40% male according to COMPTON COLLEGE ANNUAL FACT BOOK, 2023). One possible explanation is that most of the students in our program pursue traditionally female-dominated careers including nursing or other healthcare-related careers. According to the U.S. Bureau of Labor Statistics data from 2023, only a little over 12% of all licensed practical nurses, registered nurses, and nurse practitioners are male. This nationwide statistic is consistent with that for California, since according to a 2022 survey by the California Board of Registered Nursing, only about 12% of all licensed practical nurses, registered nurses, and nurse practitioners are male.

Ethnicity: The Life Science program serves an ethnically diverse student body. A majority of our students served are Latinx. The percentage of both American Indian or Alaska Native students as well as Native Hawaiian or other Pacific Islander students was slightly lower than for other demographics in the Compton College overall numbers. In 2023, the head count of

American Indian or Alaska Native students was 8 and the number of Native Hawaiian or other Pacific Islander students was 29. The overall head count of American Indian or Alaska Native students was less than five and therefore lower in the Life Science program as compared to the Compton College overall percentage of 0.13% according to COMPTON COLLEGE ANNUAL FACT BOOK, 2023. Hence, recruitment of this demographic of students is one potential area for growth. The overall percentage of Asian students is 0.62% which is higher than the college average of 48.15%. White students represent about 0.27% of students in Life Science program compared to 2.52% for the college.

Age-Structure: The age range for Life Science students goes from younger than 18 to over the age of 65. The majority fall in the age 18-24 range with a sizeable number in the 25-29 and the 30-39 age ranges as well.

Class load: The vast majority of Life Science students are part-time, which is true of the overall population of students at the college.

Educational goal: Interestingly, in the last few years, over 90% of the students in the Life Sciences have declared they intend to Transfer so this is an area that the department has experienced significant growth in. It seems that the Guided Pathways model that this department and the entire college have adopted has contributed to this growth as students minimally have to select a meta major out of five meta majors offered by the college. Many of the students in this department intend to transfer and the courses in this program are designed to support transfer students.

Course Grade Distribution: Identify and explain trends in course grades. Make sure to address gaps in grade distribution if applicable.

b) Course grade distribution

Academic Y..	Course	Final Grade										
		A	AU	B	C	D	EW	F	W	IF	P	RD
2019-20	ANAT 130	16.88% 13		15.58% 12	15.58% 12	3.90% <5	23.38% 18	5.19% <5	19.48% 14			
	ANAT 132	24.50% 184	0.13% <5	23.44% 176	11.98% 90	3.86% 29	11.19% 84	6.66% 48	17.84% 131		0.40% <5	
	BIOL 100	20.18% 88		23.62% 103	29.59% 129	6.65% 29	7.11% 31	6.42% 28	6.42% 27			
	BIOL 101	41.46% 17		26.83% 11	9.76% <5	9.76% <5	2.44% <5	2.44% <5	4.88% <5		2.44% <5	
	BIOL 102	28.00% 7		32.00% 8	20.00% 5				20.00% 5			
	BIOL 115	10.00% 6		11.67% 7	13.33% 8	1.67% <5	21.67% 13	25.00% 15	16.67% 10			
	MICR 133	30.88% 105		36.47% 124	14.41% 49	1.47% 5	3.53% 12	1.76% 6	11.47% 39			
	PHYO 131	48.76% 197		29.70% 120	10.40% 42	0.99% <5	2.72% 11	1.24% 5	6.19% 25			
2020-21	ANAT 130	26.87% 18		26.87% 18	14.93% 10	5.97% <5		10.45% 7	14.93% 10			
	ANAT 132	26.82% 192		24.72% 177	15.08% 108	4.05% 29	2.23% 15	6.56% 46	20.53% 144			
	BIOL 100	23.63% 99		25.54% 107	22.91% 96	3.34% 14	0.95% <5	11.22% 45	12.41% 51			
	BIOL 100H			33.33% <5				66.67% <5				
	BIOL 101	25.00% 10		35.00% 14	20.00% 8	5.00% <5		7.50% <5	7.50% <5			
	BIOL 102	33.33% 10		33.33% 10	23.33% 7	6.67% <5		3.33% <5				
	BIOL 115	23.26% 10		13.95% 6	9.30% <5	4.65% <5		25.58% 10	23.26% 10			
	MICR 133	49.74% 188		37.04% 140	8.73% 33	1.32% <5		0.79% <5	2.38% 9			
PHYO 131	42.37% 175		37.77% 156	12.35% 51	2.42% 10	0.24% <5	1.45% 6	3.39% 14				
2021-22	ANAT 130	41.67% 15		25.00% 9	8.33% <5	8.33% <5		5.56% <5	11.11% <5			
	ANAT 132	32.83% 131		26.32% 105	9.02% 36	4.76% 19	1.25% 5	8.27% 33	17.29% 67		0.25% <5	
	BIOL 100	35.27% 103		18.84% 55	16.10% 47	5.82% 17	0.68% <5	7.88% 23	15.41% 43			
	BIOL 101	23.08% <5		7.69% <5	23.08% <5			7.69% <5	38.46% 5			
	BIOL 102	36.36% <5		36.36% <5	9.09% <5				18.18% <5			
	BIOL 115	13.98% 13		26.88% 25	21.51% 20	3.23% <5		23.66% 21	10.75% 10			
	BTEC 101	8.70% <5		13.04% <5	21.74% 5	13.04% <5		30.43% 7	13.04% <5			
	MICR 133	42.53% 131		35.06% 108	13.31% 41	0.32% <5	0.32% <5		8.44% 25			
PHYO 131	31.21% 98		45.86% 144	11.78% 37	1.27% <5	0.96% <5	0.64% <5	8.28% 23				
2022-23	ANAT 130	17.39% <5		17.39% <5	26.09% 6	8.70% <5		4.35% <5	26.09% 6			
	ANAT 132	27.56% 97		22.73% 90	11.36% 40	6.25% 24	1.09% 7	10.51% 27	19.60% 68			

	BIOL 100	37.38% 117	19.81% 62	15.97% 50	4.79% 15	0.32% <5	10.22% 29	11.50% 36	
	BIOL 100H	100.00% <5							
	BIOL 101	29.41% 5	52.04% 9					17.65% <5	
	BIOL 102	54.55% 6	27.27% <5					18.18% <5	
	BIOL 115	37.00% 37	25.00% 25	17.00% 17	4.00% <5		7.00% 7	10.00% 10	
	BTEC 101	38.46% 5	7.69% <5	15.38% <5			7.69% <5	30.77% <5	
	BTEC 150	28.57% <5	57.14% <5					14.29% <5	
	BTEC 200	25.00% <5	12.50% <5				50.00% <5	12.50% <5	
	BTEC 210	60.00% <5						40.00% <5	
	MICR 133	32.80% 62	44.97% 85	12.17% 23	0.53% <5	1.59% <5	2.12% <5	5.82% 11	
	PHYO 131	35.91% 79	31.36% 69	14.09% 31	5.00% 11	2.27% 5	1.82% <5	9.55% 20	
2023-24*	ANAT 130	5.00% <5	40.00% 8	5.00% <5	10.00% <5		20.00% <5	20.00% <5	
	ANAT 132	26.32% 70	24.06% 64	10.53% 28	4.51% 12	0.75% <5	12.03% 31	21.80% 57	
	BIOL 100	31.71% 78	21.54% 53	13.82% 34	6.10% 15		14.23% 34	12.60% 31	
	BIOL 101	40.00% <5	50.00% 5					10.00% <5	
	BIOL 115	66.67% 44	3.03% <5	3.03% <5			9.09% 6	18.18% 12	
	BTEC 101	40.00% <5					20.00% <5	20.00% <5	20.00% <5
	BTEC 200		14.29% <5	14.29% <5				71.43% 5	
	MICR 133	27.43% 31	53.98% 61	9.73% 11				8.85% 10	
	PHYO 131	38.46% 55	29.37% 42	12.59% 18	2.80% <5	0.70% <5	3.50% 5	12.59% 18	

A course that stands out as having consistently high success and retention rates is Biotechnology 200 as compared to our other course offerings. This course is intended for students who will major in biotechnology in preparation to become a Certified Quality Improvement Associate (CQIA) through the American Society for Quality (ASQ) so it is not surprising that students would excel in this course given their motivation. Biology 100 stands out for having lower than typical success rates. Possible explanations are that these courses are intended for non-biology majors and that rotating adjunct faculty typically teach these courses so the quality of teaching is more variable. Microbiology 133 and Physiology 131 tend to have higher success and retention rates, which is probably because both of these courses have prerequisites so the students have already proven that they can be successful in college-level science courses. Plus, these students typically have the educational goal to pursue the allied health field which can be quite competitive so their grades really matter to them.

Success Rates: Identify and explain trends in success rates. Make sure to address equity gaps in success rates if applicable.

c) Success rates (Discuss your program's rates, demographic success characteristics and set a success standard for your program.)



Success Rates

Gender	Fall '19	Fall '20	Fall '21	Fall '23
Man	73%(222)	76%(191)	71%(134)	67%(135)
Unknown/Non-Re..	80%(25)	82%(11)	56%(9)	75%(32)
Woman	66%(652)	80%(672)	81%(456)	66%(406)

Program
Biological Sciences

Term
Multiple values

Gender
All

Ethnicity
All

Age Group
All

Class Load
All

Ethnicity	Fall '19	Fall '20	Fall '21	Fall '23
American Indian o..	100%(<5)	100%(<5)	50%(<5)	
Asian	84%(88)	92%(50)	92%(53)	95%(22)
Black or African A..	60%(203)	66%(212)	64%(121)	57%(152)
Latinx	66%(488)	82%(498)	80%(352)	69%(339)
Native Hawaiian o..	100%(<5)	88%(8)	80%(5)	100%(<5)
Unknown/Non-Re..	75%(95)	82%(82)	83%(52)	66%(50)
White	86%(21)	96%(23)	93%(14)	78%(9)

Age Group	Fall '19	Fall '20	Fall '21	Fall '23
18 to 24	64%(393)	77%(370)	74%(219)	59%(216)
25 to 29	67%(215)	78%(177)	79%(136)	68%(101)
30 to 39	71%(167)	80%(215)	80%(131)	66%(137)
40 to 49	76%(58)	80%(64)	88%(50)	83%(54)
50+	68%(31)	89%(18)	47%(17)	50%(10)
Under 18	87%(15)	92%(25)	95%(43)	81%(52)
Unknown/Non-R..	85%(20)	100%(5)	67%(<5)	100%(<5)

Class Load	Fall '19	Fall '20	Fall '21	Fall '23
Full-time	84%(110)	89%(169)	85%(105)	81%(100)
Part-time	66%(789)	76%(705)	77%(494)	64%(473)

Success Rate by Course

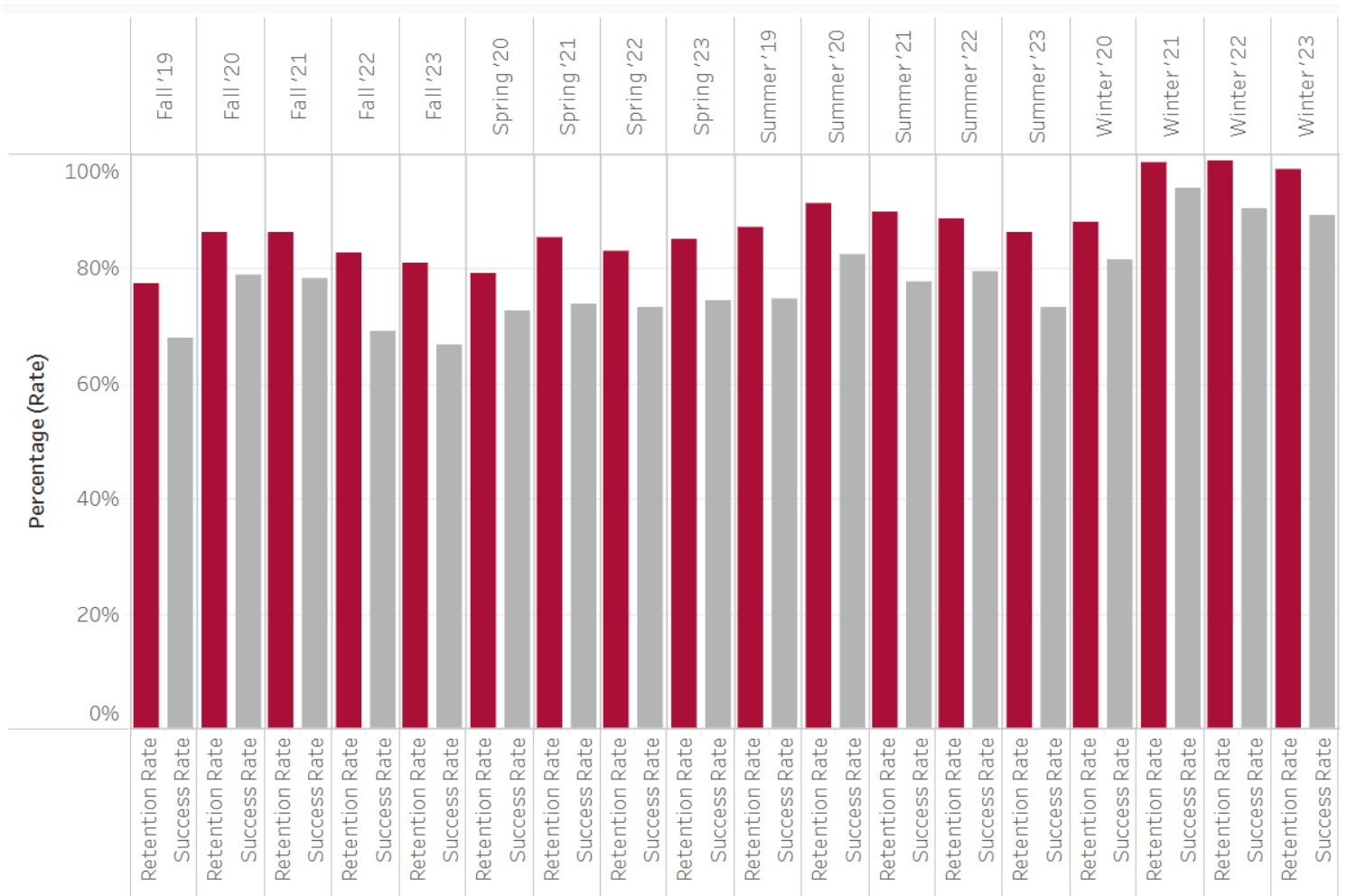
Course	2019-20	2020-21	2021-22	2022-23
ANAT 130	48%(77)	69%(67)	75%(36)	61%(23)
ANAT 132	60%(751)	67%(716)	68%(399)	62%(352)
BIOL 100	73%(436)	72%(419)	70%(292)	73%(313)
BIOL 100H		33%(>5)		100%(>5)
BIOL 101	80%(41)	80%(40)	54%(13)	82%(17)
BIOL 102	80%(25)	90%(30)	82%(11)	82%(11)
BIOL 115	35%(60)	47%(43)	62%(93)	79%(100)
BTEC 101		43%(23)		62%(13)
BTEC 150				86%(7)
BTEC 200				38%(8)
BTEC 210				60%(5)
MICR 133	82%(340)	96%(378)	91%(308)	90%(189)
PHYO 131	89%(404)	92%(413)	89%(314)	81%(220)
Grand Total	71%(2134)	78%(2109)	77%(1489)	74%(1259)

The Life Science department was not provided with disaggregated success rates of different student groups such as the grades of disproportionately impacted students so we cannot address equity gaps in this program review. One trend that appears consistently in all four academic years analyzed is that have lower success rates than full-time students, which could be because part-time students are juggling more things in their lives such as jobs or caretaking responsibilities. Encouragingly, the overall success rate in 2023 of 74% is slightly higher as 71% in 2019 despite significant and abrupt disruption due to the Covid-19 pandemic. The success rates have varied from 71% to 78% during the years analyzed.

Retention Rates: Identify and explain trends in retention rates. Make sure to address equity gaps in retention rates if applicable.

d. Retention rates (Discuss your program's retention rates, addressing any student equity issues as applicable.)

Success (maroon bars) and Retention (gray bars) Rates by Semester



The overall retention rate ranged from 67% in Fall 2023 to 94% in Winter 2021. While there is variability in the retention rate from semester to semester, one trend that emerges is that the retention rate generally seemed higher in the winter semesters, possibly because students were only taking that one course and could focus more intently than during the standard semester in which students typically take multiple courses at the same time.

Distance Education: Compare and contrast success and retention rates between in-person and distance education courses.

e. Compare success and retention rates in face-to-face classes with distance education classes.



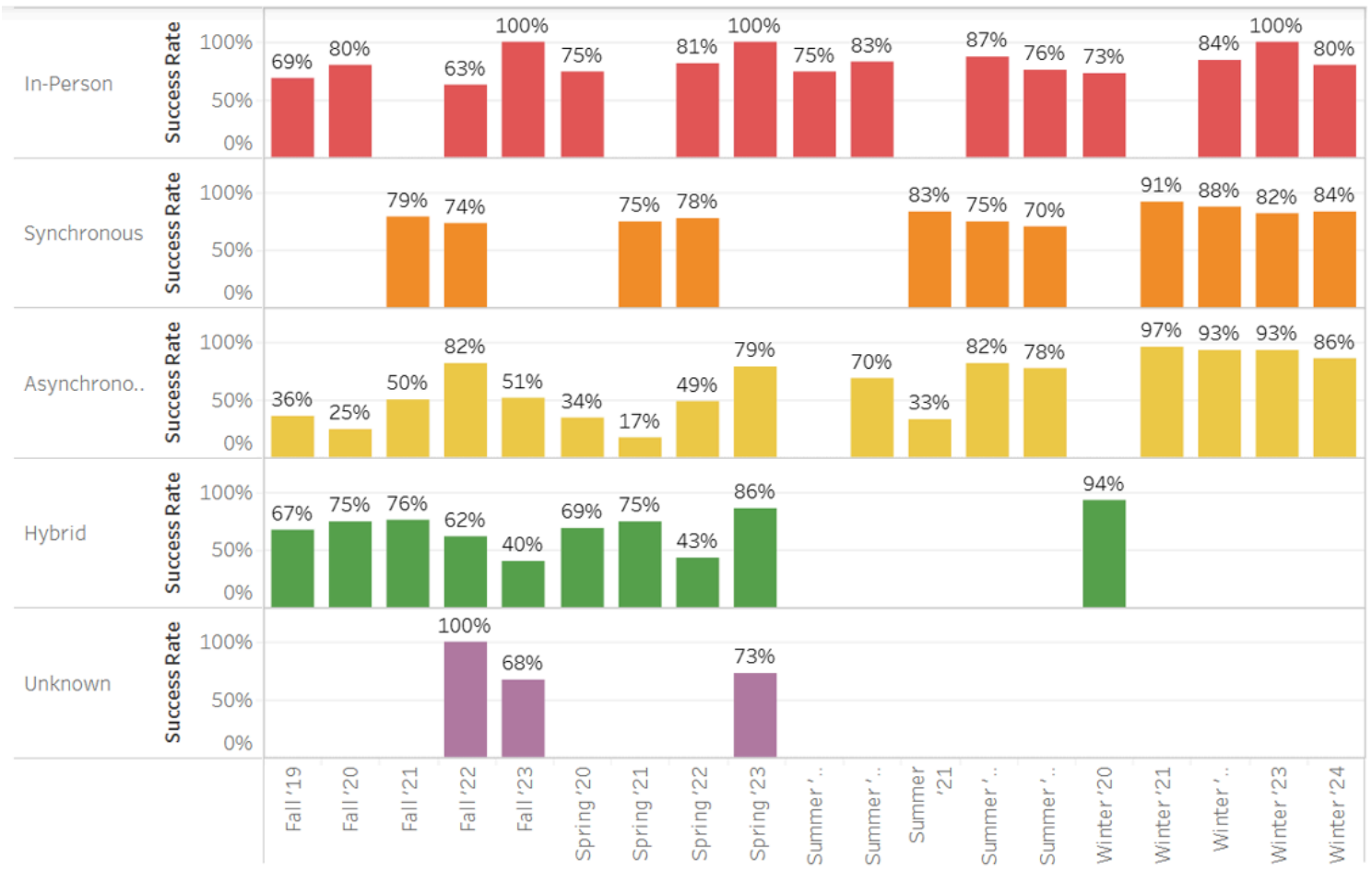
Success by Modality

Instruction..	Fall '19	Fall '20	Fall '21	Fall '22	Fall '23	Spring '20	Spring '21
In-Person	69%(807)	80%(767)		63%(257)	100%(39)	75%(743)	
Synchronous			79%(564)	74%(115)			75%(678)
Asynchrono..	36%(25)	25%(8)	50%(6)	82%(92)	51%(94)	34%(35)	17%(12)
Hybrid	67%(67)	75%(99)	76%(29)	62%(13)	40%(5)	69%(75)	75%(102)
Unknown				100%(<5)	68%(435)		



Success by Modality

Instruction..	Spring '22	Spring '23	Summer '19	Summer '20	Summer '21	Summer '22	Summer '23
In-Person	81%(59)	100%(13)	75%(306)	83%(351)		87%(47)	76%(45)
Synchronous	78%(385)				83%(239)	75%(95)	70%(103)
Asynchrono..	49%(73)	79%(63)		70%(23)	33%(27)	82%(44)	78%(58)
Hybrid	43%(23)	86%(7)					
Unknown		73%(437)					



Although the student count in these data are rather low which makes it difficult to draw any conclusions, but the success rates in asynchronous, online courses seem to be generally lower than those of synchronous or in-person courses except for winter semesters, possibly because of the higher level of discipline required to be successful in an asynchronous course.

Fill Rates: Discuss course sections offered and fill rates. Analyze any applicable trends.

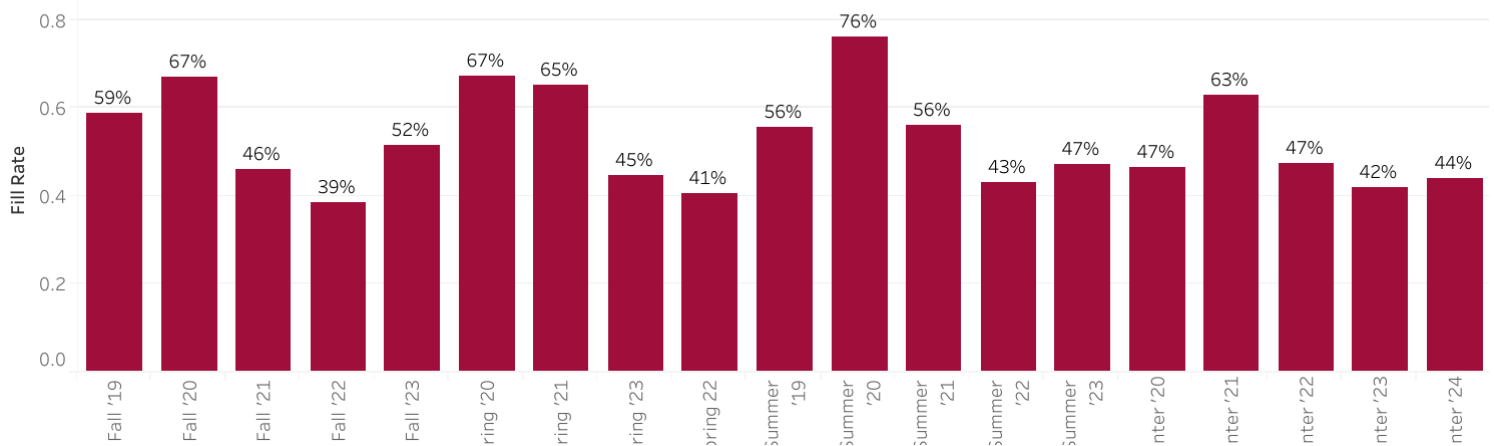
f) Enrollment statistics with section and seat counts and fill rates

Fill Rates

Course	Fall '19	Fall '20	Fall '21	Fall '22	Fall '23	Spring '20	Spring '21	Spring '23	Spring 22
ANAT 130	27% (15)	52% (29)	26% (19)	28% (10)	44% (16)	36% (20)	29% (21)	19% (7)	18% (13)
ANAT 132	55% (248)	52% (224)	32% (138)	35% (102)	58% (167)	48% (178)	46% (183)	31% (88)	29% (104)
BIOL 100	65% (140)	75% (157)	42% (88)	54% (88)	59% (99)	78% (141)	69% (124)	63% (123)	28% (74)
BIOL 100H	0% (<5)	38% (<5)		100% (<5)					
BIOL 101					33% (10)	64% (23)	75% (27)	30% (9)	35% (8)
BIOL 102	56% (20)	83% (30)	75% (9)	25% (9)					
BIOL 115	44% (16)	11% (<5)	55% (33)	58% (52)	72% (65)	58% (21)	23% (7)	50% (30)	49% (27)
BTEC 101				30% (9)	17% (5)				87% (20)
BTEC 150				0% (<5)				20% (6)	
BTEC 200					23% (7)			23% (7)	
BTEC 210				10% (<5)	0% (<5)				
BTEC 220					0% (<5)				
MICR 133	74% (106)	104% (150)	77% (111)	34% (49)	53% (76)	94% (135)	101% (145)	59% (85)	72% (104)
PHYO 131	70% (150)	75% (159)	63% (120)	41% (73)	58% (101)	88% (159)	95% (171)	50% (89)	57% (100)

Fill Rates

Course	Summer '19	Summer '20	Summer '21	Summer '22	Summer '23	Winter '20	Winter '21	Winter '22	Winter '23
ANAT 130	32% (9)	25% (7)							
ANAT 132	53% (86)	84% (113)	44% (64)	46% (50)	58% (42)	58% (21)	94% (34)	29% (19)	51% (37)
BIOL 100	46% (50)	67% (48)	38% (27)	56% (37)	82% (79)	43% (46)	47% (34)	59% (57)	42% (28)
BIOL 100H									
BIOL 101	42% (15)	28% (10)	0% (<5)	14% (5)	0% (<5)				
BIOL 102									
BIOL 115		63% (22)	77% (23)	27% (8)	0% (<5)				
BTEC 101									
BTEC 150									
BTEC 200									
BTEC 210									
BTEC 220									
MICR 133	67% (48)	103% (74)	92% (66)	57% (41)	47% (34)				
PHYO 131	83% (59)	96% (68)	82% (59)	35% (25)	32% (23)			53% (8)	22% (8)



This program's fill rates varied from 39% to 76% and the fill rate for each semester was always equal to or over 35%, indicating a there was not a good match between the number of sections offered and student demand. However, this could be explained by the significant and abrupt disruption due to the Covid-19 pandemic. As of Fall 2023, the fill rate has increased to 52% so it seems to be trending upward.

Course Scheduling: Discuss the days and times offered for courses. Why were these choices made? Should changes be made for future scheduling?

e) Scheduling of courses (day vs. night, days offered, and sequence)

Meeting Ti..	Fall '19	Fall '20	Fall '21	Fall '22	Fall '23
Afternoon	12% (105)	7% (62)	7% (44)	8% (38)	15% (87)
Evening	21% (190)	26% (222)	22% (131)	23% (106)	23% (124)
Self-Paced		1% (8)	1% (6)	5% (26)	16% (94)
Weekend	10% (87)	13% (115)	10% (60)	4% (21)	5% (30)
NA	3% (25)			11% (51)	3% (20)

Meeting Ti..	Spring '20	Spring '21	Spring '22	Spring '23
Morning	40% (326)	39% (287)	41% (207)	33% (172)
Afternoon	19% (159)	18% (141)	9% (50)	6% (29)
Evening	28% (232)	31% (230)	28% (147)	32% (157)
Self-Paced	4% (35)	2% (12)	14% (73)	18% (90)
Weekend	9% (76)	11% (85)	8% (45)	6% (30)

Overall, the enrollment in day courses was much higher (33-41%) than for night courses (28-32%).

Degree and Transfer: What number of students earn degrees or certificates? What number of students transfer?

In General Science, students earned 475 degrees from 2018 to 2023. They earned 94 degrees during 2018-2019, 63 degrees during 2020-2021, 106 degrees during 2021-2022, and 92 degrees during 2022-2023. The data does not show any certificates or transfers for this major. In General Studies, students earned 1254 degrees from 2018 to 2023. They earned 226 degrees during 2018-2019, 161 degrees during 2019-2020, 228 degrees during 2020-2021, 297 degrees during 2021-2022, and 342 degrees during 2022-2023. The data does not show any certificates or transfers for this major. In Kinesiology, students earned 25 degrees from 2018 to 2023. They earned no ADT's during 2018-2019, six ADT's during 2019-2020, seven ADT's during 2020-2021, less than 5 ADT's during 2021-2022, and 10 ADT's during 2022-2023. The data does not show any certificates for this major. In Nursing, students earned 288 degrees from 2018 to 2023. They earned 55 degrees during 2018-2019, 68 degrees during 2019-2020, 64 degrees during 2020-2021, 57 degrees during 2021-2022, and 44 degrees during 2022-2023. The data does not show any certificates or transfers for this major. In Physical Science, students earned 63 degrees from 2018 to 2023. They earned 15 degrees during 2018-2019, 18 degrees during 2019-2020, 17 degrees during 2020-2021, 8 degrees during 2021-2022, and 5 degrees during 2022-2023. The data does not show any certificates or transfers for this major. In Pre-Dentistry or Medicine, students earned 14 degrees from 2018 to 2019, none after that. The data does not show any certificates or transfers for this major. In Respiratory Care, students earned less than five degrees from 2018 to 2019, none after that. The data does not show any certificates or transfers for this major.

List any related recommendations

1. According to the U.S. Bureau of Labor Statistics data from 2023, only a little over 12% of all licensed practical nurses, registered nurses, and nurse practitioners are male. This nationwide statistic is consistent with that for California, since according to a 2022 survey by the California Board of Registered Nursing, only about 12% of all licensed practical nurses, registered nurses, and nurse practitioners are male. Therefore, recruitment efforts targeting the male students on campus may be a potential area for enrollment growth in the Life Science program.
2. The percentage of both American Indian or Alaska Native students as well as Native Hawaiian or other Pacific Islander students was slightly lower than for other demographics in the Compton College overall numbers. Hence, recruitment of this demographic of students is one potential area for growth.
3. The success rate of 18-24 year old students was slightly lower than for other demographics in the Compton College overall numbers. Hence, academic support and academic counseling of this demographic of students is one potential area for improvement.
4. Faculty in the Life Science program should strategize to incorporate free or lower cost textbooks and other materials into our courses.

5. Faculty in the Life Science program need to improve communication with academic counselors so that students are directed to register for the courses most appropriate for them.
6. The Life Science program needs to offer hybrid and/or online courses to accommodate students who are seeking a more flexible schedule. We need to improve and standardize better equipment, software, and lab support both for online and face to face labs.
7. Life Science faculty needs to continue to work to improve the success and retention rates in all the courses but most importantly, in Anatomy. We need to have permanent agreements with academic publishing firms in place for using textbooks, dissection software and virtual labs for anatomy and physiology.
8. We will support improved student outcomes by partnering with Biocom California to create a dedicated cohort for our students to participate in their Life Science Career Fellowship program.
9. We will seek out funding such as NSF S-STEM grants to meet our students financial needs so that they can work less and focus on school more.

Academic Program Review: (3) Curriculum : Version by Marsh, Katherine on 12/01/2025 11:29

Provide the curriculum course review timeline to ensure all courses are reviewed at least once every 6 years.

All the courses taught in the Life Science program are part of the Compton College curriculum. The Natural Sciences Curriculum Committee with the participation of our Life Science faculty ensures that the course outlines are reviewed and approved by the Compton College Curriculum Committee at least once in the last six years.

The timeline below identifies when course-level and program-level outcomes will be assessed by discipline faculty. Each course and each program learning outcome shall be assessed on a four-year cycle in alignment with the program's program review.

	SLO Lead	Year 1		Year 2		Year 3		Year 4	
		FA2022	SP2023	FA2023	SP2024	FA2024	SP2025	FA2025	SP2026
PLO #1				X					
PLO #2						X			
PLO #3								X	
ANAT 130			X						
ANAT 132					X				

	SLO Lead	Year 1		Year 2		Year 3		Year 4	
		FA2022	SP2023	FA2023	SP2024	FA2024	SP2025	FA2025	SP2026
PLO #1				X					
PLO #2						X			
PLO #3								X	
BIOL 100		X							
BIOL 100H		X							
BIOL 101			X						
BIOL 101H			X						
BIOL 102				X					
BIOL 102H				X					
BIOL 103					X				
BIOL 115						X			
BIOL 117							X		
BIOL 118								X	

	SLO Lead	Year 1		Year 2		Year 3		Year 4	
		FA2022	SP2023	FA2023	SP2024	FA2024	SP2025	FA2025	SP2026
PLO #1		X							
PLO #2				X					
PLO #3						X			
BTEC 101			X						
BTEC 150				X					
BTEC 200					X				
BTEC 210						X			
BTEC 220							X		

	SLO LEAD	Year 1		Year 2		Year 3		Year 4	
		FA2022	SP2023	FA2023	SP2024	FA2024	SP2025	FA2025	SP2026
PLO #1				X					
PLO #2						X			
PLO #3								X	
MICR 133			X						

	SLO LEAD	Year 1		Year 2		Year 3		Year 4	
		FA2022	SP2023	FA2023	SP2024	FA2024	SP2025	FA2025	SP2026
PLO #1				X					
PLO #2						X			
PLO #3								X	
PHYO 131			X						

The following courses have been taught in the Life Science Program as stated in the Compton Center 2024-2025 catalog:

(1). Anatomy 130 (Essentials of Anatomy and Physiology, 4units)

This course is the study of anatomy coupled with physiology. Students compare the structure and function of human organ systems to those of other vertebrates. The laboratory includes dissection of sheep brains and hearts, cow eyes and other vertebrates. Laboratory experiments reinforce principles of anatomy and the basic principles of chemistry, cell biology, histology, embryology, and genetics.

(2). Anatomy 132 (General Human Anatomy, 4 units)

This in-depth course covers all eleven systems of the human body including related histology and pathology. The systems covered are skeletal, muscular, nervous, integument, respiratory, digestive, reproductive, urinary, endocrine, immune, and lymphatic. Models of the human body and dissection of higher vertebrates are emphasized in laboratory.

(3). Biology 100 (Fundamentals of Biology, 4 units)

This course is a survey of all living things: prokaryotes, protists, fungi, plants, and animals. Basic principles of structure, function, and relationships of living organisms are discussed with special reference to humans.

(4). BIOL 100H - (Honors Fundamentals of Biology, 4 units)

This honors course is designed for students in the Honors Transfer Program. This course is a survey of all living things: prokaryotes, protists, fungi, plants, and animals. Basic principles of structure, function, and relationships of living organisms are discussed with special reference to humans. This course is enriched through writing assignments that involve research and analysis.

(5). BIOL 101 - (Principles of Biology I, 5 units)

This course is a survey of eukaryotic organisms, their evolution and ecology. The student will have a thorough exposure to plant and animal anatomy and physiology and will utilize animal dissection in the lab. Students will be expected to complete a project that includes hypothesis, prediction, experimentation, and presentation of results. This course is one of three courses in the biology series designed for biology majors, including those students planning to pursue a career in medicine, dentistry, or other life sciences.

(6). BIOL 102 - (Principles of Biology II, 5 units)

This course offers a detailed study of eukaryotic cell anatomy, metabolism, and division, including the study of Mendelian genetics and the molecular genetics of eukaryotes. Prokaryotic cellular structure (eubacteria and archaea), microbial genetics, and viruses are also studied. The scientific method is discussed in the lecture component and students implement elements of the process in various laboratory exercises. This course is one of three courses in the biology series designed for biology majors, including those students planning to pursue a career in medicine, dentistry, or other life sciences.

(7). BIOL 115 - (Environmental Aspects of Biology, 3 units)

Basic ecological and biological principles and concepts are emphasized in the study of the structure and function of ecosystems. Major ecological problems such as over-population, resource depletion and food production are related to endangered species and habitat degradation. Environmental pollution of air and water resources are considered in local areas as well as national and international situations. Air quality and global warming issues are considered. Students are encouraged to participate in local activities addressing environmental problems and restoring and improving local habitats.

(8). BTEC 150 – (Techniques in Cell and Molecular Biology, 4 units)

This course prepares students for entry-level work in the biotechnology industry by emphasizing basic cellular and molecular biology techniques needed to work effectively in a bioscience laboratory. A heavy emphasis is placed on culturing and manipulating cells including genetic engineering and protein analysis. This course also introduces students to standard biotechnology laboratory skills including laboratory measurements, preparation of solutions, data collection and evaluation, basic separation methods, molecular techniques, aseptic technique, and documentation. Good communication and work-readiness skills are emphasized.

(9). MICR 133 - (General Microbiology, 5 units)

This course is a study of microbial anatomy and physiology, classification, microbes in water, air, soil, food, sewage, and medical aspects of microbiology. It also includes the study of fundamental techniques in the growth, culture, and identification of microorganisms. Laboratory experiments are performed by students to reinforce principles of microbiology discussed in lecture. This course is designed for students planning to pursue careers in the health sciences or other life sciences.

(10). PHYO 131 - (Human Physiology, 4 units)

This course is a study of cellular physiology and the functional aspects of the following human body systems: circulatory, respiratory, digestive, excretory, reproductive, muscle, nervous and endocrine. In the laboratory, experiments are performed to demonstrate principles discussed in lecture. This course is designed primarily for those majoring in the Health Sciences.

Explain any course additions to current course offerings.

The following courses have been added to the program course offerings with the idea of creating a certificate that will lead into entry jobs in the biotech field.

BIOL 103 - (Fundamentals of Molecular Biology, 3 units)

This course is an introduction to molecular biology. The student will study DNA, RNA and protein structure; protein biochemistry; protein purification and analysis; genome organization of viruses, prokaryotes and eukaryotes, DNA replication; transcription and splicing; regulation of transcription; translation; and recombinant DNA technology. The student will also explore the uses of DNA technology, such as forensics and agriculture, as well as the ethical considerations of these uses.

This course was approved by the Curriculum Committee and the Board of Trustees and was launched in Fall 2024.

BTEC 101 – (Introduction to Biotechnology, 4 units)

This course introduces fundamental biology concepts with a focus on biotechnology and is appropriate for a wide range of students, including non-biology majors. Course content will include cell structure and function, patterns of inheritance, molecular biology, genetic engineering, drug development, biofuels, and discussion of utilizing living systems to address current societal challenges. Students will gain hands-on experience with biotechnology techniques and applications

This course was offered in the fall semester starting Fall 2021.

BTEC 150 – (Techniques in Cell and Molecular Biology, 4 units)

This course prepares students for entry-level work in the biotechnology industry by emphasizing basic cellular and molecular biology techniques needed to work effectively in a bioscience laboratory. A heavy emphasis is placed on culturing and manipulating cells including genetic engineering and protein analysis. This course also introduces students to standard biotechnology laboratory skills including laboratory measurements, preparation of solutions, data collection and evaluation, basic separation methods, molecular techniques, aseptic technique, and documentation. Good communication and work-readiness skills are emphasized

This course was offered in the spring semester starting Spring 2022.

BTEC 200 - (Quality and Regulatory Practices in Biomanufacturing, 3 units)

This course introduces concepts of quality and regulatory practices as they relate to biomanufacturing in regulated environments. Topics including documentation, good laboratory practice (GLP), current good manufacturing practice (cGMP), Quality Control (QC), and Quality Assurance (QA) will be emphasized. This course will prepare students to become certified as a

Certified Quality Improvement Associate (CQIA) through the American Society for Quality (ASQ).
This course was offered in the fall semester starting Fall 2022.

BTEC 210 – (Technical Communication for Regulated Environments, 1 unit)

This course provides the essential tools to write some of the many types of documents used in regulated environments in the field of biotechnology including reports, standard operating procedures (SOP's), and investigations. It addresses the elements of technical writing, technical oral presentations, and develops the techniques needed to deliver high quality documents and presentations that are logical, clear, and concise.

This course was offered in the spring semester starting Spring 2022.

Explain any course deletions and inactivations from current course offerings.

Life Science program did not offer Biology 117 (Marine Biology) and Biology 118 (Marine Biology Laboratory) in 2020-2024 program review period and plan to inactivate it; until now, they are still showing as active in Curriqnet. We have not been offering Biology 103 (Fundamentals of Molecular Biology) because we do not offer the pre-requisite organic chemistry course, but plan to offer this course in the near future.

Describe the courses and number of sections offered in distance education. (Distance education includes hybrid classes.)

Due to the Covid-19 pandemic, all life sciences classes were moved to a remoted setting using Canvas as the main platform for instruction delivery. In the last two academic years (Since Fall 2022), classes have moved into either a remote (online) or an in-person setting.

During Fall 2024, the different instruction modalities used and the number of class sections using them are listed in the following table:

Class Name	In-Person	Hybrid	Remote	Online
Biology 100	1	1	1	2
Biology 101	1	0	0	
Biology 115	2	0	0	1
Btech 101	0	1	0	0
Btech 220	0	1	0	0
Anatomy 130	0	0	1	0
Anatomy 132	4	0	4	0
Microbiology	2	0	2	0
Physiology 131	2	0	2	0

Discuss how well the courses, degrees, or certificates meet students' transfer or career training needs.

All the courses listed above, that are required for an associate in science degree in Life Science, have been offered in the last four years. These courses are required for transfer to a four-year university, receive an associate in science degree or earn a certificate. All the courses offered in the Life Sciences area and listed in this program review are CSU- and UC-transferable courses and as listed in the Compton College catalog.

The Life Sciences program provides courses (Essentials of Anatomy & Physiology, Anatomy, Biology, Microbiology, and Physiology) that prepare students for admission into nursing and other allied health programs. Many students also take these courses (e.g. Fundamentals of Biology) to satisfy their general education requirements. Students who have completed courses offered in the Life Sciences have graduated with skills to go through training programs and function as Registered Nurses, Nurse Practitioners, Radiology Technicians, Physical and Occupational Therapists and Physician Assistants. Students have to enroll into an allied health training program or transfer to four-year universities to complete their academic studies in various disciplines in order to obtain bachelor's degrees or professional licenses.

The Life Sciences program offers certificates in biotechnology. The Biotechnology Laboratory Assistant Certificate of Achievement prepares students with the technical skills needed to work in a biotech laboratory. The Biomanufacturing Technician certificate of achievement provides training in the theory as well as the practical applications of processes in an industrial biomanufacturing environment. In the Biomanufacturing A.S. degree program, students will gain key knowledge, skills, and abilities needed to work in the biomanufacturing industry, which uses biological systems to produce biofuels, vaccines, pharmaceutical drugs, and other therapeutic agents.

How many students earn degrees and/or certificates in your program? Set an attainable, measurable goal related to student completion of the program's degrees/certificates.

How many students earn degrees and/or certificates in your program?



Success Rates

Educational Goal	Fall '20	Fall '21	Fall '22	Fall '23	Spring '21	Spring '22	Spring '23
Basic Skills	0%(<5)		100%(<5)				100%(<5)
Degree/Cert Only	92%(24)	67%(15)	100%(<5)		85%(13)	56%(9)	100%(<5)
Enrichment	78%(692)	77%(497)	75%(8)		74%(673)	75%(486)	100%(<5)
Intend to Transfer	82%(125)	82%(49)	69%(439)		75%(87)	45%(29)	75%(484)
NA				67%(573)			
Retrain/Recertify	67%(<5)	100%(<5)			0%(<5)		100%(<5)
Undecided/Unstated	69%(29)	89%(35)	63%(27)		50%(18)	75%(16)	52%(29)

For the school semesters that are listed in the above table, the number of students who earned degrees and/or certificate appears to be around 96. Fall 23 data is not included in the above statistics. These numbers, for whatever reason, are rather low and there is an opportunity for the program to increase these numbers by at least 25% in the next program review cycle.

Are any licensure/certification exams required for program completion or career entry? If so, what is the pass rate among graduates? Set an attainable, measurable goal for pass rates and identify any applicable performance benchmarks set by regulatory agencies.

No licensure/certification exams are required for program completion or career entry. However, students have to enroll into an allied health training program or transfer to four-year universities to complete their academic studies in various disciplines in order to obtain bachelor's degrees and/or professional licenses.

List any related recommendations.

The need for advanced biotechnology training in the health care and industry to fulfill the federal science goals requires the program to keep pace with industry demands and up-to-date knowledge. In order to accomplish these goals, the program requires new laboratory equipment and laboratory spaces. Unfortunately, due to funding restraints, state funding is not commensurate with the growth we have been experiencing. The lack of appropriate and expanded laboratory space has placed a limit on the number of courses that can be offered and thus the number of students that can be served to meet industry and university entrance demands and requirements. The biological sciences program budget can no longer absorb the cost of buying laboratory materials as the costs of almost everything has skyrocketed, this includes the cost of dissection specimen, chemicals, modern equipment/technology, equipment maintenance and other consumables. Physiology is a particular case in point as this discipline does not have any meaningful or current biological lab materials and instruments and as such, instructors are relying more and more on simulations instead of real hands-on lab experiments and activities.

To improve retention and success rates, Compton College has developed and implemented the Science, Technology, Engineering and Math (STEM) Guided pathway in the program that supports a student-centered approach that can significantly increase the number of students earning community college credentials, while closing equity gaps. This program will guide each student effectively and efficiently from her/his point of entry through attainment of high-quality postsecondary credentials and careers with value in the labor market.

It is recommended that the Life Sciences program should strive towards smaller class sizes and more course sections for better interaction between students and instructors. Our labs were built for a maximum of 28 seats, but the class limit has risen to between 36 and 40. It is our belief that a smaller class size would be more effectively managed by the instructors and will translate into a higher success rate than what we have now, especially when it comes to lab sections that place a heavy demand on the instructors providing the necessary guidance and one-on-one attention that lab work entails. The college should better organize existing student support programs and strategically use existing funding to support student success.

Hiring supplemental instructors (SI) would definitely be a great help to our students to support their academic performance and retention rate. The relatively lower success rates in anatomy and physiology may be improved by offering a combination of Anatomy and Physiology (134A and 134B). This course is UC and CSU transferrable, and it is available at the El Camino College, and other area colleges like Riverside Community College and Pasadena City College. This will give students an alternative route towards completing their courses. More intradepartmental discussion is needed about this.

Resuming the Biology 103 courses is highly recommended for Health Science majors and of great demand among our students. Finally, the Life Science program should continue to invest in faculty/staff development programs, technology and laboratory materials in order to provide the best quality of instruction and achieve the highest level of student success.

Academic Program Review: (4) Assessment of Student Learning Outcomes (SLO's) Final Submission: Version by Elfarissi, Hassan on 04/22/2025 02:23

Provide a copy of your alignment grid, which shows how course, program, and institutional learning outcomes are aligned.

SLO-PLO Alignment Grid

Course	SLO #	SLO statement	SLO to PLO (Mark with an X)					
			P1	P2	P3	P4	P5	P6
BIOL 101	1	Understand and apply principles of the scientific method; recognizing an idea based on reproducible evidence.	X					
BIOL 101	2	Use of Microscope The student will be able to use the compound and dissecting microscope to observe cells and microorganisms.		X				
BIOL 101	3	Use basic energy principles to explain the flow of energy in living systems, such as those that occur in the cellular metabolic pathways of photosynthesis and cell respiration, or the relationships observed between autotrophs and heterotrophs in ecosystems.	X					
BIOL 102	1	Understand and apply principles of the scientific method; recognizing an idea based on reproducible evidence.	X					
BIOL 102	2	Use the compound and dissecting microscope to observe cells and microorganisms.		X				
BIOL 102	3	Describe key activities in cell replication.	X	X				
ANAT 132	1	Use language appropriate to anatomy and the health sciences.						
ANAT 132	2	Demonstrate the use of instruments for dissection, histology, and to gather data.					X	
ANAT 132	3	Identify higher vertebrate body structures of all body systems.						

BIOL 100	1	Understand and apply principles of the scientific method, recognizing an idea based on reproducible evidence.	X					
BIOL 100	2	Use the compound and dissecting microscope to observe cells and microorganisms.		X				
BIOL 100	3	Describe key activities in cell replication.	X					
OR BIOL 100H								
BIOL 100H	1	Understand and apply principles of the scientific method, recognizing an idea based on reproducible evidence. Honors students will design a novel experiment, gather evidence, and use scholarly research to support the explanation of the results.	X					
BIOL 100H	2	Use the compound and dissecting microscope to observe cells and microorganisms.		X				
BIOL 100H	3	Describe key activities in cell replication.	X					
BIOL 101	1	Understand and apply principles of the scientific method; recognizing an idea based on reproducible evidence.	X					
BIOL 101	2	Use of Microscope The student will be able to use the compound and dissecting microscope to observe cells and microorganisms.		X				
BIOL 101	3	Use basic energy principles to explain the flow of energy in living systems, such as those that occur in the cellular metabolic pathways of photosynthesis and cell respiration, or the relationships observed between autotrophs and heterotrophs in ecosystems.	X					
OR BIOL 101H								
BIOL 101H	1	Understand and apply principles of the scientific method; recognizing an idea based on reproducible evidence.	X					
BIOL 101H	2	Use of Microscope The student will be able to use the compound and dissecting microscope to observe cells and microorganisms.		X				
BIOL 101H	3	Use basic energy principles to explain the flow of energy in living systems, such as those that occur in the cellular metabolic pathways of photosynthesis and cell respiration, or the relationships observed between autotrophs and heterotrophs in ecosystems.	X					
BIOL 102	1	Understand and apply principles of the scientific method; recognizing an idea based on reproducible evidence.	X					
BIOL 102	2	Use the compound and dissecting microscope to observe cells and microorganisms.		X				
BIOL 102	3	Describe key activities in cell replication.	X					
OR BIOL 102H								
BIOL 102H	1	Understand and apply principles of the scientific method; recognizing an idea based on reproducible evidence.	X					
BIOL 102H	2	Use the compound and dissecting microscope to observe cells and microorganisms.		X				
BIOL 102H	3	Describe key activities in cell replication.	X					
BIOL 117	1	Understand and apply principles of the scientific method; recognizing an idea based on reproducible evidence.	X					
BIOL 117	2	Use basic energy principles to explain the flow of energy in living systems, such as those that occur in the cellular metabolic pathways of photosynthesis and cell respiration, or the relationships observed between autotrophs and heterotrophs in ecosystems.	X					
BIOL 117	3	Describe how biologically significant materials move between the biotic and abiotic components of an ecosystem and the role living things play in the cycling of these nutrients.	X					
BIOL 118	1	Understand and apply principles of the scientific method; recognizing an idea based on reproducible evidence.	X					
BIOL 118	2	Use the compound and dissecting microscopes to observe cells and microorganisms.		X				
BIOL 118	3	Demonstrate how the principles of energy flow exist in relationships observed between autotrophs and heterotrophs in ecosystems.	X					
BIOL 133	1	Use language appropriate to microbiological studies and the health sciences. The students exhibit quality of understanding and better success achieved during the semester.	X					
BIOL 133	2	Demonstrate the use of instruments to gather data.		X				
BIOL 133	3	Identify microbes and explain their roles in health and disease.		X				
PHYO 131	1	Use language appropriate to physiological functions and the health sciences.	X					
PHYO 131	2	Demonstrate the use of instruments to gather physiological data.		X				
PHYO 131	3	Describe mechanisms and explain physiological processes that occur in the human body on cellular, organ, systemic, and organismal levels.	X					

Course	SLO #	SLO statement	SLO to PLO (Mark with an X)					
			P1	P2	P3	P4	P5	P6
BTEC 101	1	Apply the fundamentals of cellular and molecular biology concepts to biotechnology research and its practical applications.	X					
BTEC 101	2	Develop and maintain accurate and concise written laboratory records.	X					
BTEC 150	1	Use basic cell and molecular biology techniques to analyze and manipulate nucleic acids, proteins, and cells.	X					
BTEC 150	2	Create an accurate record of lab work and results of cell biology and protein chemistry experiments.	X					
BTEC 150	3	Apply critical thinking to analyze cell biology and protein chemistry experiments.	X					
BTEC 200	1	Explain the basic GMP/GLP regulation requirements established by the FDA and other regulatory agencies as they relate to the biotechnology laboratory and industrial settings.						
BTEC 200	2	Outline the process followed in meeting the GMP/GLP standards.						
BTEC 200	3	Assess the importance of corrective action and preventive action in continuous improvement.						
BTEC 210	1	Justify standards for process control to ensure product safety and efficacy.						
BTEC 210	2	Generate a protocol that is appropriate and effective for the technical laboratory task.	X					
BTEC 210	3	When faced with an unexpected outcome in a regulated process, the student will be able to distinguish the components of an effective response.						
BTEC 220	1	Apply concepts of quality systems to assess and modify a laboratory production facility for process improvement and regulatory compliance.						
BTEC 220	2	Quantify the level of microbial contamination from diverse samples as part of an environmental monitoring plan.	X					

BTEC 220	3	Validate software and laboratory equipment used in the biomanufacturing industry.							
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Provide a timeline for your course and program level SLO assessments.

The timelines below identify when course-level and program-level outcomes will be assessed by discipline faculty. Each course and each program learning outcome shall be assessed on a four-year cycle in alignment with the program's program review.

	Year 1		Year 2		Year 3		Year 4		
	SLO Lead	FA2022	SP2023	FA2023	SP2024	FA2024	SP2025	FA2025	SP2026
PLO #1				X					
PLO #2						X			
PLO #3								X	
ANAT 130			X						
ANAT 132					X				
APHY 134				X					
APHY 135						X			

	Year 1		Year 2		Year 3		Year 4		
	SLO Lead	FA2022	SP2023	FA2023	SP2024	FA2024	SP2025	FA2025	SP2026
PLO #1				X					
PLO #2						X			
PLO #3								X	
BIOL 100		X							
BIOL 100H		X							
BIOL 101			X						
BIOL 101H			X						
BIOL 102				X					
BIOL 102H				X					
BIOL 103					X				
BIOL 115						X			
BIOL 117							X		
BIOL 118								X	

	Year 1		Year 2		Year 3		Year 4		
	SLO Lead	FA2022	SP2023	FA2023	SP2024	FA2024	SP2025	FA2025	SP2026
PLO #1		X							
PLO #2						X			
PLO #3								X	
BTEC 101					X				
BTEC 150						X			
BTEC 200							X		
BTEC 210								X	
BTEC 220									X

	Year 1		Year 2		Year 3		Year 4		
	SLO LEAD	FA2022	SP2023	FA2023	SP2024	FA2024	SP2025	FA2025	SP2026
PLO #1				X					
PLO #2						X			
PLO #3								X	
MICR 133				X					

	Year 1		Year 2		Year 3		Year 4		
	SLO LEAD	FA2022	SP2023	FA2023	SP2024	FA2024	SP2025	FA2025	SP2026
PLO #1				X					
PLO #2						X			
PLO #3								X	
PHYO 131				X					

State the percent of course and program SLO statements that have been assessed.

Both the course and program level SLO statements have been assessed each year. Out of 28 assessments that were distributed, 22 were completed for a percentage of course and program SLO statements completion of 79%. The assessments that have not been completed during that time period are due to be assessed in the next year. Moreover, certain courses with a low percentage of assessed SLO statements such as Biology 115: (Environmental Aspects of Biology) are only offered intermittently. Finally, our program has implemented better practices to encourage part-time faculty to complete their SLO assessments in a timely manner including assigning a full-time faculty member as the lead faculty to oversee the data collection, interpretation, and submission into the eLumen system.

Summarize the SLO and PLO assessment results over the past four years and describe how an analysis of those results led to improved student learning. Analyze and describe those changes. Provide specific examples.

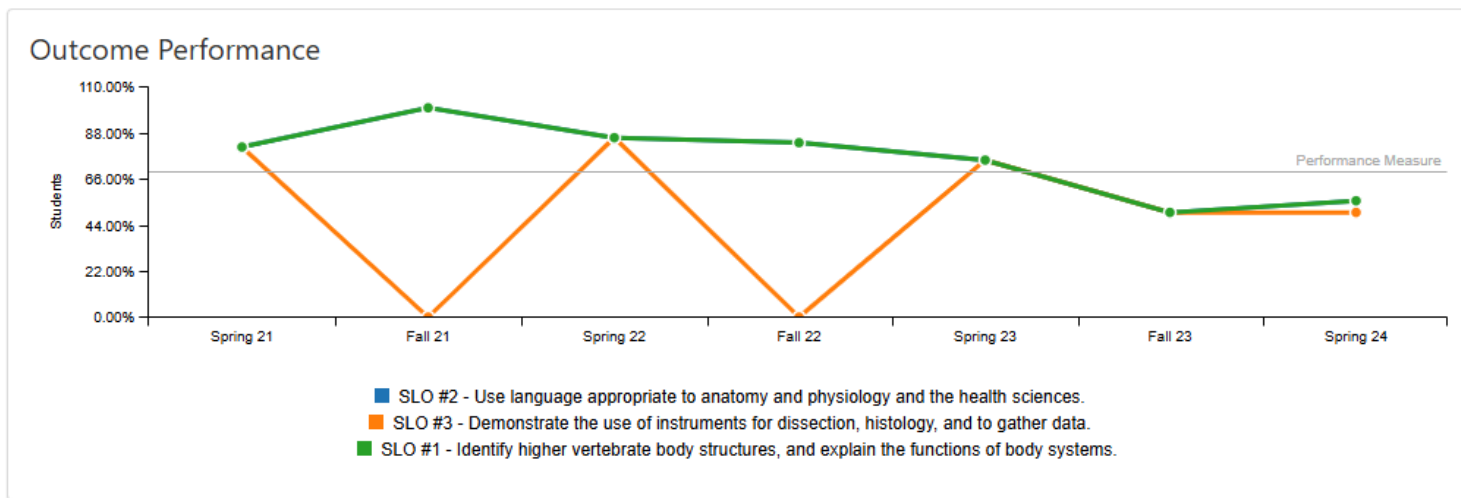
SLO assessments completed in Life Sciences in the last 4 years gave valuable information which is helping faculty to:

1. Understand how to better facilitate student learning.
2. Determine what's working and what's not working in their courses or program.
3. Select the appropriate teaching strategy.
4. Prioritize the need for equipment and technology to improve instructions.
5. Help students to explain what they can do and what they know.

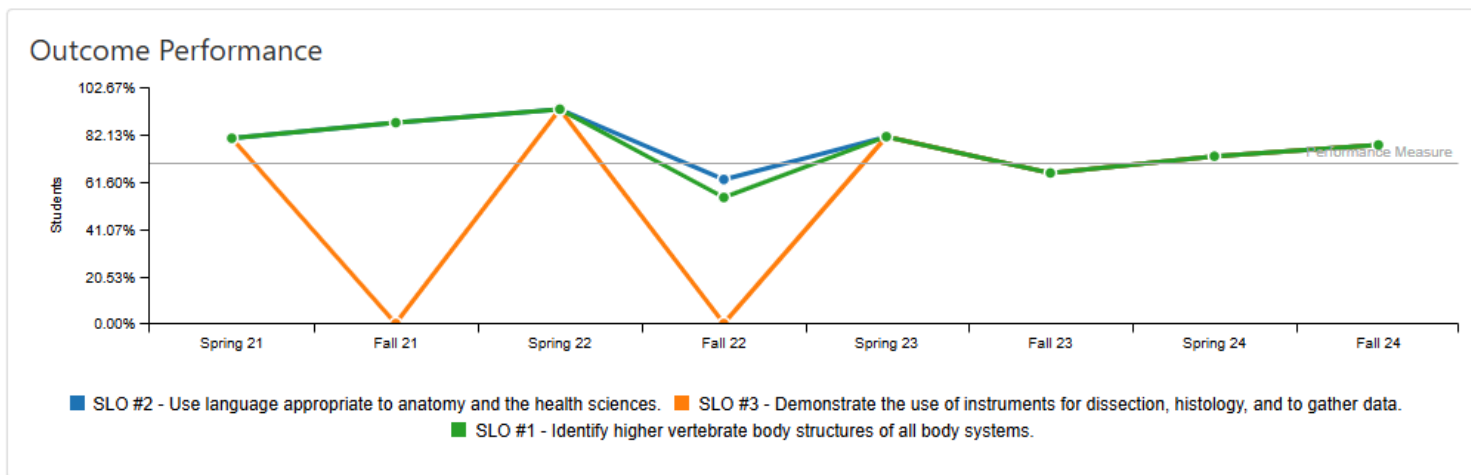
As a result of SLO assessments and reports, the faculty is continuously updating their pedagogy, acquiring new strategies, and improving student/professor relationships. On the average, most of our students succeed in the individual SLO assessments conducted but with noticeable steady declines since 2020. The Life Science program assessed and completed with expected results of the SLO reports that are due. We strongly believe that the Covid-19 pandemic and the transition to remote learning and instruction, inadequate student preparation in reading skills, requisite background knowledge, time management skills, and taking too many classes in a semester contributes to their lack of success.

An example of the steady decline that was noticed could be seen in the SLO results of the Anatomy 130 and Anatomy 132 classes. However, the declining numbers start to show slight improvements since the 2023 school year which coincided with the gradual return to face-to-face instruction. The following graphs show the SLO results for those two classes:

Anatomy 130:



Anatomy 132:



Describe how you have improved your SLO/PLO assessment process and engaged in dialogue about assessment results.

Each course is assigned to a full-time faculty coordinator, who is responsible to discuss SLO tools, rubrics, results, and then find ways to further improve the outcomes. Each instructor provides their results and gives input on how the course /program can be improved. It is common knowledge that many of our students become overwhelmed and frustrated by mid-semester because of the amount of material that has to be covered in each of our courses. It is recommended that assessments are done close to the time the material was taught to have a good idea if students understood the materials when taught. If time permits, we may conduct another assessment any other time before the end of the semester.

List any related recommendations.

The following recommendations are suggested for improved Student Learning Outcomes (SLO's) and their assessment:

1. All sections of a course should have similar SLO/PLO assessment tools, rubrics and faculty completion within a mutually agreed time frame.
2. The data should be forwarded to the course SLO coordinators.

3. The assessment report needs to be discussed by the faculty to suggest any changes in teaching strategies and methodologies to improve the results.
4. Encourage the availability of enough tutoring for all students.
5. SI coaches could be assigned to sections reporting issues with success and retention.
6. All weekly lab schedules be uniform in all sections of a courses and lab scheduling to be well aligned with lectures.

Academic Program Review: (5) Analysis of Student Feedback : Version by Marsh, Katherine on 12/01/2025 11:37

Describe the results of the student survey in the area of student support.

Looking at the data corresponding to Student success. There are over 90% of students that agree that the instructor and the course function to aid in their academic goal. Over 90% of students agree that the instructor provides a space for participation, and 85% of students have a sense of community in the class.

Students chose the essential skills required to succeed in class were 1) reading 2) note taking 3) critical thinking techniques, 4) study groups, and 5) test anxiety management at 27%, 23%, 22%, 14% and 9%, respectively. This survey question seems to be a "select one" and not check all that apply based on the final percentage of 100%. The skills that students need more help with the program's courses are 1) note taking 2) critical thinking techniques 3) reading 4) test anxiety management and 5) study groups which were selected at 23%, 20%, 16%, 15% and 11%, respectively. This matches their choice in what skills are required to succeed in class.

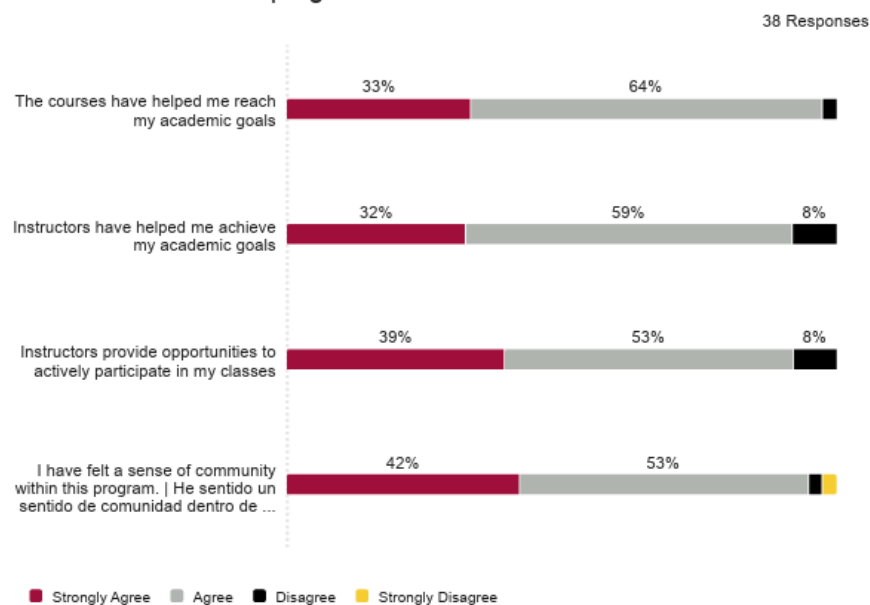
42% of students confidently know which courses were required to complete their goal. 53% of students were aware of only some of the courses that were required to complete their goal. 5% did not know the classes required to complete their goal. Hence, we need to communicate with the student success team to ensure that students are meeting with their counselors and completing their educational plans.

97% of students have an idea or know exactly what they want to do, and with just 4 responses the occupations are English Teacher, Veterinarian, Engineering and Radiologist.

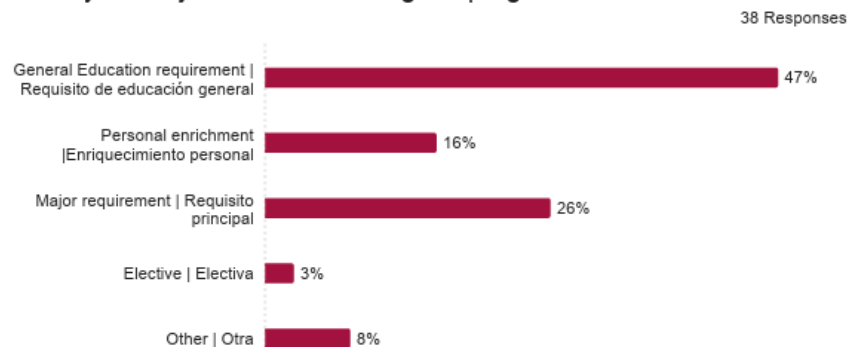
The challenges students face to completing studies at Compton College are 1) basic needs, 2) needing help with academics 3) being connected to the campus (campus life), 4) access to technology and 5) childcare which responses were 30%, 17%, 13%, 9%, and 2%, respectively. We will advocate for more basic needs support. In terms of helping with academics, we will request to upgrade the muscle and skeletal models in the tutoring center so that students who want extra practice can go to the tutoring center to use those models outside of class.

Academic Support and Development

Please rate how much you agree or disagree with the following statements about this program.

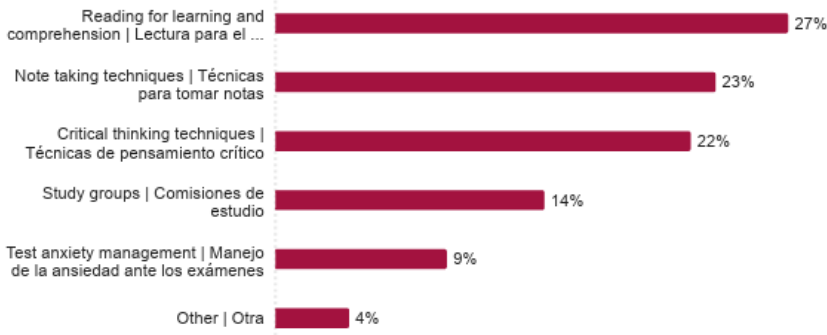


What is your major reason for taking the program's classes?



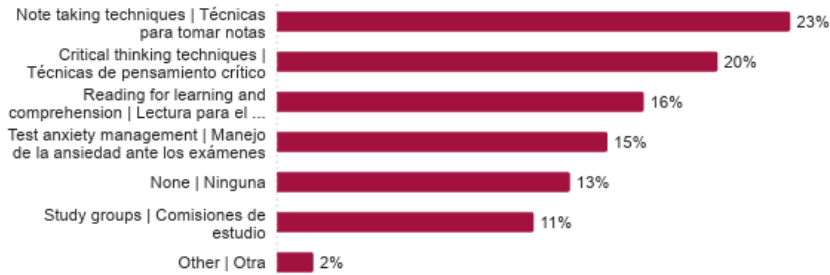
Using the assignments/examinations that were administered in the program's courses, what skills are essential to succeed in these classes? Check all that apply.

38 Responses



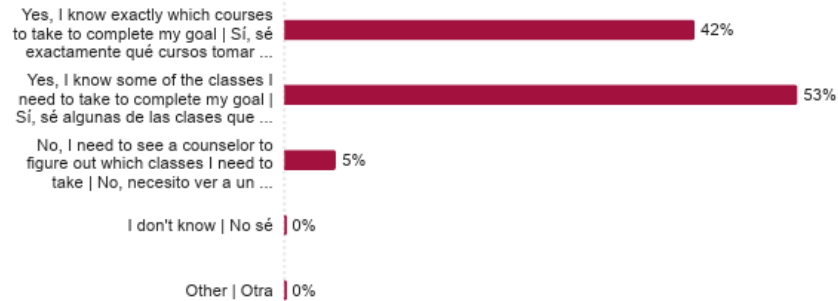
What skills do you need more help with in the program's courses? Check all that apply.

38 Responses



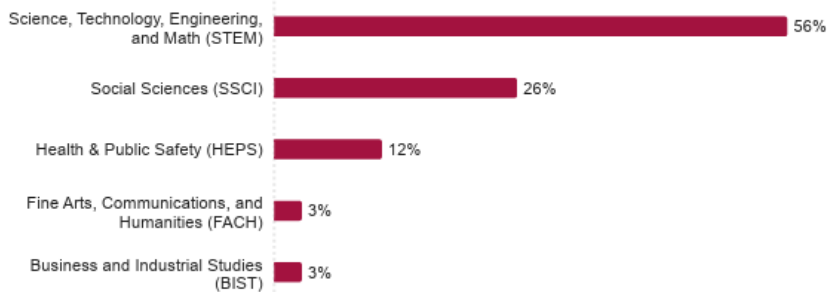
Do you know which courses you have to take to complete your goal?

38 Responses



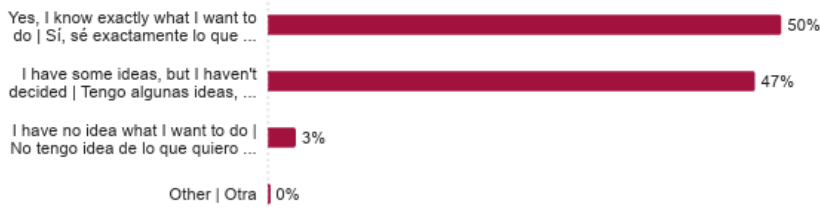
What Guided Pathway Division is the program in?

34 Responses



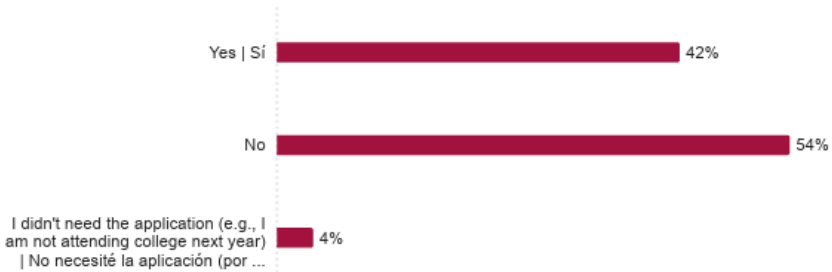
Have you thought about what you want to do for your career?

38 Responses



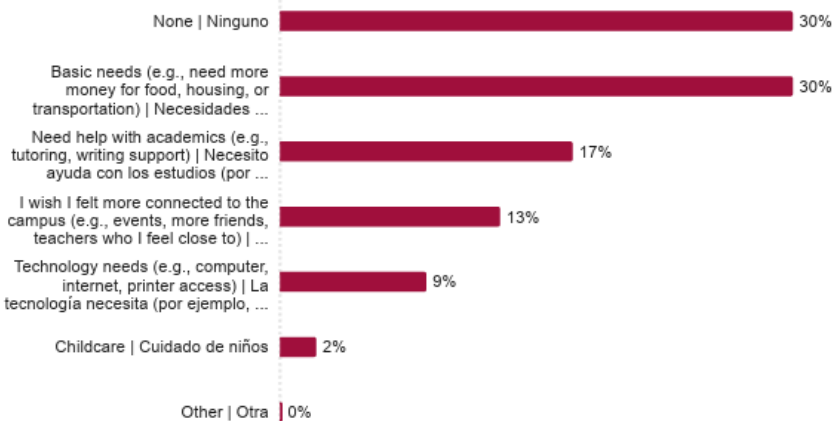
Did you complete the Free Application for Federal Student Aid (FAFSA) or California Dream Act Application for next year?

26 Responses



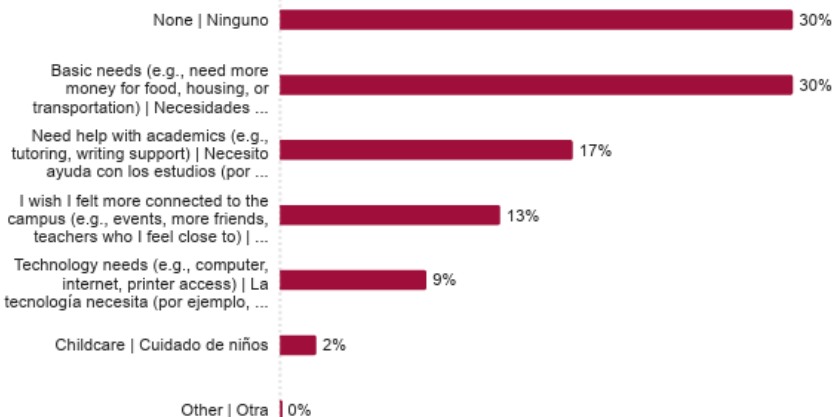
When thinking about your studies at Compton College, what challenges do you face in successfully completing your studies?

38 Responses



When thinking about your studies at Compton College, what challenges do you face in successfully completing your studies?

38 Responses

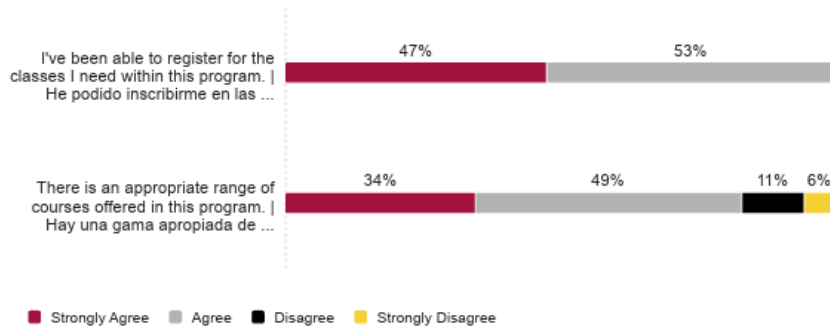


Describe the results of the student survey in the area of curriculum.

100% of students agree that they can register for their classes. 83% of students agree that there is an appropriate range of courses, but 17% of those that took the survey disagree. 84% of students prefer to take courses in the morning or at midday, while 11% prefer the evening and to a lesser extent, at 5%, in the afternoon. Most students prefer an in-person class (63%), while 13% prefer either a hybrid or online. 11% of students did not mind either teaching style. Yet only 11% have enrolled in an online course. For those who chose to take an online course, a response of 25% showed that students took it for either a new experience, scheduling, ease of course or other. For those who have taken online courses all answered that the courses were easy for them, had less work involved, and were able to pass the course. 75% were comfortable to use the technology in their online course.

Please rate how much you agree or disagree with the following statements about the program

38 Responses



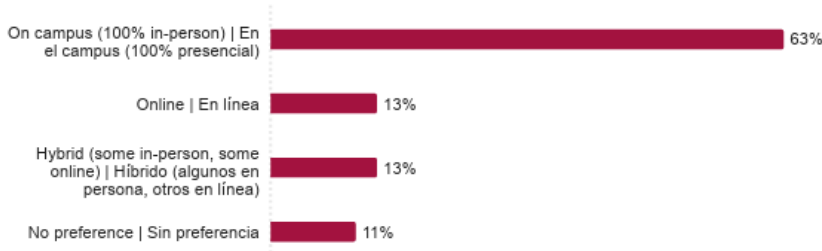
What percentage of your courses are online versus in-person?

37 Responses



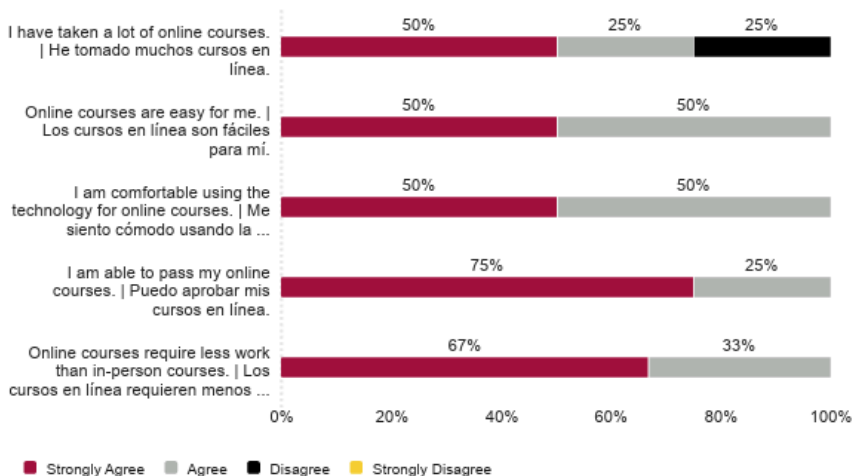
Which teaching method do you prefer?

38 Responses



Please rate how much you agree or disagree with the following statements about online courses in the program

4 Responses



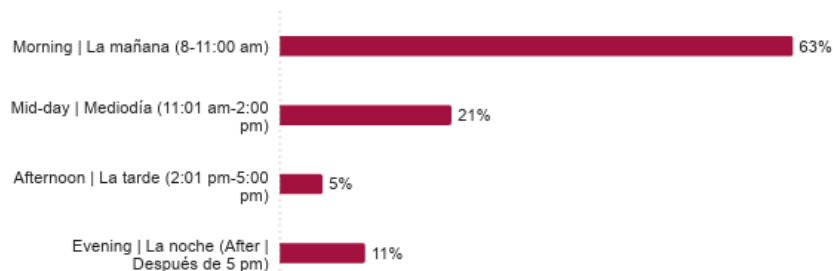
Have you enrolled in an online course in the program before?

38 Responses



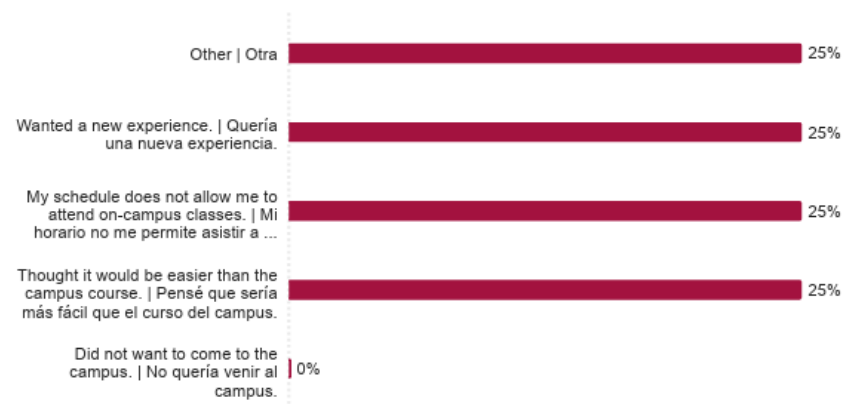
What time of the day do you prefer to take courses at Compton College?

38 Responses



Why did you enroll in an online course?

4 Responses

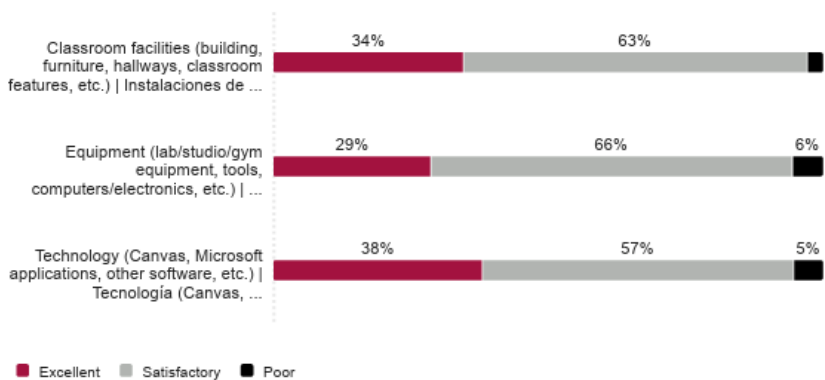


Describe the results of the student survey in the area of facilities, equipment and technology.

Over 94% of students are satisfied with the campus facilities, equipment, and technology offered at Compton College. Free responses mentioned that the class technology was easy to use.

Please rate the program's facilities, equipment, and technology (*Full text of questions available below)

37 Responses

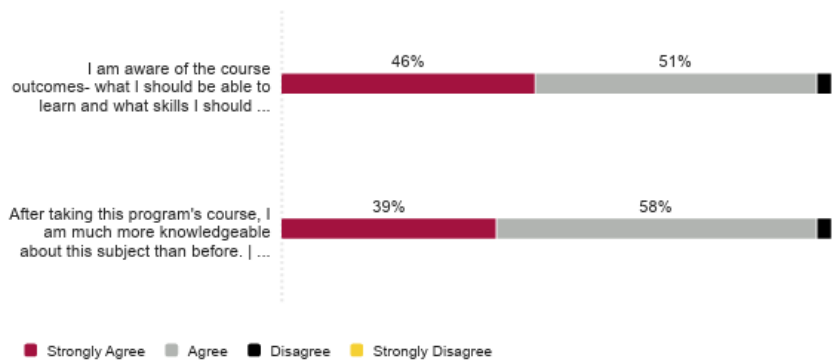


Describe the results of the student survey in the area of program objectives.

Over 95% of students are aware of the course outcomes and come out knowing more than at the start of the class.

Indicate the degree to which you agree with the following: (*full text of questions listed below)

37 Responses



Discuss the implications of the survey results for the program.

Overall, for the students that took the survey they were satisfied with Compton College. This survey would have more weight if a larger population of students would respond to the survey. The general analysis read, "The Overall Program Review Student Survey had a 31.2% response rate, which is excellent. However, since the number of students is so low, these responses do not necessarily represent the thoughts of all students."

Discuss the results of other relevant surveys (if applicable).

No Value

List any related recommendations

Majority of students agree that the course and instructor are working in their favor for their academic success. The best way to maintain or increase students in reaching their academic goal is by aiding in their note taking and critical thinking skills. This would imply that more time is required to go over notes and gradually build towards critical thinking.

One of the challenges that students mention is being connected to the campus (campus life), and if this can improve, then potentially this can check off friend/support groups and reducing test anxiety.

We need to communicate with the student success team to ensure that students are meeting with their counselors and completing their educational plans.

We will advocate for more basic needs support.

We will request to upgrade the muscle and skeletal models in the tutoring center so that students who want extra practice can go to the tutoring center to use those models outside of class.

Academic Program Review: (6) Facilities and Equipment : Version by Marsh, Katherine on 12/01/2025 11:42

Describe and assess the existing program facilities and equipment.

Currently, in the Life Science program, the existing facilities and equipment are barely adequate for the program's size and urgently require improvements and expansion to accommodate future enrollment growth. The limited availability of classroom space restricts the program's ability to add new course sections or entirely new courses. Our classrooms are heavily utilized, scheduled back-to-back from Monday to Friday, covering mornings, afternoons, and evenings. Presently, six classrooms are dedicated to Biology (MS108), Anatomy (MS 110 and 128), Physiology (MS103), Biotechnology (MS105) and Microbiology (MS 107). The existing laboratory space constrains the scheduling of additional Anatomy, Physiology, and Microbiology courses, making the addition of more lab spaces essential.

The program includes two lab preparation areas, currently designated for Biology and Microbiology preparation but also serving as storage for Anatomy and Physiology materials. A highly functional cold room supports the preservation of dissected animals and organs. In 2022, the Biotechnology program was added to our classrooms. Due to space constraints, classroom (MS105) is currently being utilized for this Biotechnology program.

Equipment:

Physiology rooms has been updated by adding pointers attached to eyepieces. This upgrade allows instructors to easily highlight structures to students, enhancing their ability to identify tissues. However, because these microscopes are old, the objective lenses contain scratches, creating false artifacts. These lenses may need replacement soon. New microscope models of torso, upper and lower limbs, organ of Corti and ovary were acquired for the Anatomy room last year, and an iWorx kit was purchased for the Physiology room. The biotechnology program has a lot of advanced equipment including a bioreactor, two chromatography systems, and a flow cytometer.

Explain the immediate (1-2 years) needs related to facilities and equipment. Provide a cost estimate for each need and explain how it will help the program better meet its goals.

The immediate priority for the Life Science program is regular maintenance and servicing of existing equipment and facilities. Reliable equipment and facilities are crucial to support the intensive instruction occurring within the program. Any damage or loss of equipment negatively impacts student enrollment and success rates, given the absence of backup equipment, models, and space.

Regular janitorial services are urgently required in the classrooms, particularly room (MS 110 and MS109) which have huge stains on the floor. Classrooms should be swept weekly and mopped biweekly. Faculty members work diligently to retain students beyond their initial semester; however, many first-time students have voiced concerns about the aesthetics of the Math and Science building, both internally and externally.

An alarm system for the cold room is recommended, alerting staff if the door is improperly closed or if temperature fluctuations occur rapidly, ensuring the proper preservation of dissection specimens. Additionally, due to space constraints, new Biotechnology equipment remains unused in boxes, indicating an urgent need for additional classroom and storage space.

For the Physiology course, a single iWorx kit is insufficient for all students to perform laboratory activities. Therefore, three additional iWorx kits are needed immediately to adequately facilitate lab experiments for all students. These new kits allow students to download the raw data on their own laptops and work at home at their own phase, thus reducing the need for additional laptops in the classroom.

For the Anatomy course, a ceiling mounted camera is urgently needed to facilitate faculty to project dissection of specimens directly on the screen preventing crowding of students around one table making it difficult for students to observe the dissection.

The biotechnology program needs a cell culture room with biosafety cabinets and TV23 could potentially be utilized for such a purpose. These courses also need more environmental monitoring equipment.

Explain the long-range (2-4+ years) needs related to facilities and equipment. Provide a cost estimate for each need and explain how it will help the program better meet its

goals.

Our ongoing planning will prioritize student needs, considering healthcare industry forecasts predicting shortages in qualified personnel due to an aging population and retirement trends among current healthcare professionals. Anticipating increased student enrollment in health and science careers, investment in improved facilities for lecture and laboratory settings is essential. Rooms MS105 and 128 require restructuring to accommodate both lecture and laboratory classes, potentially serving biotechnology courses as well.

Additional classroom space is necessary to maximize the number of course sections offered. Adding another Microbiology section starting at 12.45 -5.15pm will increase enrollment as currently only four microbiology classes are offered. Furthermore, the seating arrangement in Anatomy Room (MS 110) should be reconfigured to ensure all students face the instructor's whiteboard at the front. A modular configuration with movable laboratory benches would provide optimal flexibility, facilitating quick transitions between lecture formats and group work.

List any related recommendations.

Retrofitting existing classrooms and labs for a proper gas supply is critical to ensuring safe and efficient learning environments. The Life Science program proposes targeted facility repairs and modifications. Detailed facility and equipment needs, including chemicals, models, and associated costs, are outlined in the Prioritized Recommendations table.

The department also recommends immediate repairs to non-functioning electrical outlets in rooms all rooms in the Math and Science building. Additionally, classrooms must accommodate both Mac and PC laptops without requiring adapters for projectors.

Fume hoods in rooms MS106 and MS 108 require urgent repair due to safety concerns. HEPA filters are needed immediately in fume hoods and biosafety cabinets and service contracts for the biotech equipment and changing of the HEPA filters should be included. The overall condition of the building and classrooms currently receives only satisfactory ratings from students. At least two additional classroom and laboratory spaces are essential for accommodating more flexible scheduling, increasing enrollment, and expanding course offerings. The total cost estimate for this project will depend on the scope of the structural expansion. Finally, establishing a dedicated Human Cadaver Dissection lab with adequate storage would be preferable for cadaver specimens, particularly benefiting students pursuing healthcare careers.

Our biotechnology program needs a cell culture room to install the biosafety cabinets that we've already purchased and it also needs environmental monitoring equipment.

Academic Program Review: (7) Technology and Software : Version by **Marsh, Katherine** on **12/01/2025 11:44**

Describe and assess the adequacy and currency of the technology and software used by the program.

Classrooms in the Life Science program have recently been upgraded with audiovisual (AV) technology, including new projectors, screens, computers running Windows 10, and Utology software. Human Physiology labs are equipped with BIOPAC software installed on several laptops, allowing students to conduct lab activities effectively.

Campus-wide Wi-Fi technology ensures students and instructors have continuous internet access, both on campus and elsewhere significantly enriching learning opportunities. The subscription to McGraw Hill Connect, acquired during the pandemic, along with other Learning Tools (LT) apps provided by the California Chancellor's Office, enabled interactive virtual learning experiences, greatly improving student engagement and outcomes.

We currently have subscriptions to Labster for online lab simulations and JoVE for online lecture content and assessment which work well.

Explain the immediate (1-2 years) needs related to technology and software. Provide a cost estimate for each need and explain how it will help the program better meet its goals.

With a slight increase in overall course enrollment, upgrading infrastructure and technological resources is essential to attract and retain students. Integrating advanced technology and hands-on training within the Life Science program significantly enhances students' employability and career opportunities. Incorporation of advance technology utilizing the following interactive audiovisual assistants will make learning fun and save the college from costly expenses.

1. iWorx kits (4nos): this device measures blood pressure, glucose utilization, urine analysis, EKG, EMG, spirometry, muscle contraction, auditory and visual reflexes in addition to other experiments that reduces downtime for students and faculty and saves costly expenses.

Approximate cost : \$5500 /kit for a total of \$22,000.

\$100/pack of Electrode strips

\$100/each repair for maintenance

2. Digital Professional Trinocular Compound Microscope 40X with camera connection to the AV system

Approximate cost: \$3000

Maintenance/extended warranteee \$600

3. Procuring access to McGraw Hill Connect, JoVe and Labster apps for both faculty and students that offer more than 130 lab stimulations that support science courses including anatomy, physiology, biology and microbiology courses.

Approximate cost: \$60 per student/year.

4. Procuring access to Lynda.com for faculty and students that offer high quality courses for learning skills online that are technology and business related on a variety of subjects from recognized industry experts.

Approximate cost: \$360 annually.

5. JoVE Education subscription

Approximate cost: \$ 25150

6. The current lighting situation in MS 128 needs to be fixed ASAP which makes it difficult to see the projection on the screen when lights are on at night and becomes complete dark when the lights are turned off.

7. Labster subscription

Approximate cost is \$12,372.00 for 4 units.

Explain the long-range (2-4+ years) needs related to technology and software. Provide a cost estimate for each need and explain how it will help the program better meet its goals.

Given the modest rise in overall enrollment, continued improvements to campus infrastructure and technology are recommended to attract and retain students. Integrating cutting-edge technology and hands-on training in the Life Science program will significantly enhance students' employability and career prospects. Our long-range needs also encompass the same short-term needs as we plan to continue using those technologies and software packages.

List any related recommendations.

College should offer free laptops and tablets, and provide affordable internet access to low-income based students. Additionally training programs and workshops should be offered to students on the effective use of new technologies and software.

As per the students survey, 97% reported that the facilities were satisfactory and 95% reported that the the equipment and use of technology was satisfactory. The student population that responded to the study survey was 37, which does not reflect the true opinion of the students. Hence recommended making the student survey mandatory for all the students enrolled at Compton to get a clear and comprehensive report.

Continue to purchase subscriptions to Labster and JoVE.

Academic Program Review: (8) Staffing : Version by Marsh, Katherine on 12/01/2025 11:47

Describe the program's current staffing, including faculty, administration, and classified staff.

The Life Science program employs seven full-time (FT) faculty members and numerous part-time(PT) faculty. All full-time faculty hold advanced degrees and are highly qualified. Two new full-time members joined recently, although one resigned within a year. Hiring an additional full-time Biotechnology instructor in Fall 2024 was essential due to increased enrollment and limited faculty resources.

Currently, 80% of Anatomy 132 and Physiology 131 sections, 100% of Microbiology, and 100% of Biotechnology courses are taught by full-time faculty. However, 60% of Biology 10 sections are taught by part-time faculty. Increasing the ratio of full-time faculty teaching these high-demand courses remains essential for student retention and success.

Two full-time laboratory technicians currently handle supplies, material preparation, and lab setup. To effectively support these technicians, hiring at least one hourly student worker is highly recommended.

Limited courses have Supplemental Instruction (SI) coaches, including Biology 100 and anatomy, yet dedicated tutoring support is insufficient. The Life Science program operates under the Science, Technology, and General Programs (STGP) Division, supervised by one division Chair and a Dean.

Explain and justify the program's staffing needs in the immediate (1-2 years) and long-term (2-4+ years). Provide cost estimates and explain how the position/s will help the program better meet its goals.

The program's most immediate staffing need is additional dedicated tutors and SI coaches, specifically targeting Anatomy, Physiology, and Microbiology courses. Academic support services such as tutoring and SI have demonstrated effectiveness in improving student retention, success, and persistence. Additionally, they play a critical role in bridging equity gaps for underprepared students. SI coaches, specifically trained to foster study skills and student self-efficacy, should be available approximately 20 hours per week, covering daytime and evening hours. The estimated annual cost for hiring SI coaches is approximately \$12,000-\$15,500.

Immediate action is needed to hire additional dedicated tutors and SI coaches for 20 hours per week to significantly improve student success rates.

List any related recommendations.

Many students population attending evening classes are parents with small children from low-income households that rely on affordable, accessible and cost effective childcare. The limited on-campus childcare services that close at 5.00pm makes it difficult for the student parents to continue their education as they struggle to find childcare while juggling between work, school and family responsibilities. Procuring and offering childcare grants to students and more funding for extended evening hours on-campus childcare programs and services, will enable student parents to take more credits and complete their programs faster which increases retention and higher rates of graduation.

Hire SI coaches to support student learning and a lab assistant to support our technicians to prepare lab materials.

Ongoing investment in technology, facilities improvements, strategic staffing, and effective academic support will enable the Life Science program to effectively respond to industry demands, facilitate student success, and sustainably grow student enrollment.

Academic Program Review: (9) Direction and Vision : Version by Marsh, Katherine on 12/01/2025 11:51

Describe relevant changes within the academic field/industry. How will these changes impact the program in the next four years?

Our organization's trajectory is shaped by both the Comprehensive Master Plan and Strategic Initiatives. We emphasize excellence in educational delivery and enhanced learner assistance to boost persistence and achievement. Faculty members demonstrate unwavering dedication to self-improvement through comprehensive evaluation processes, professional learning opportunities, and thoughtful planning.

The dynamic landscape of biotechnology advancement, shifting healthcare sector requirements, and national scientific objectives demand that our educational offerings remain current. To address this challenge, we're focusing on modernizing our instructional technology and laboratory environments. Our current spatial limitations constrain our ability to offer sufficient course sections, thereby reducing our capacity to prepare qualified candidates for industry positions and academic progression.

The biological sciences have witnessed transformative innovations recently:

- The emergence of CRISPR technology has fundamentally altered approaches to genetic research and clinical applications
- Novel cancer treatments through immune system modification, particularly CAR T-cell methodologies, demonstrate exceptional clinical outcomes
- Regenerative medicine utilizing stem cell approaches offers promising pathways for addressing previously untreatable conditions

This era of unprecedented medical innovation necessitates well-prepared professionals capable of advancing research initiatives, manufacturing therapeutic products, and delivering specialized clinical care.

Artificial intelligence is also has the potential to dramatically shape the careers and type of work available in the life sciences and healthcare fields. Our program needs to be ready to change with the field and prepare our students for the future.

Explain the direction and vision of the program and how you plan to achieve it.

We've developed a specialized biotechnology curriculum designed to equip students with practical skills for laboratory and biomanufacturing environments across pharmaceutical, cosmetic, and related sectors. Participants will gain industry-relevant competencies culminating in a biomanufacturing credential. The Greater Los Angeles metropolitan area currently experiences a substantial workforce gap in mid-level bioscience positions. Market analysis reveals approximately 276 annual position openings with only 178 qualified applicants, leaving a deficit of nearly 100 candidates yearly. Recognizing that many students ultimately pursue advanced degrees, we're designing coursework that facilitates seamless university transfer while still providing immediate employment options.

Our institution serves diverse communities traditionally underrepresented throughout STEM disciplines. We aim to transform this pattern by implementing targeted support mechanisms that promote achievement in biological science coursework. Evidence indicates that experiential learning methodologies not only enhance educational outcomes universally but significantly narrow achievement disparities for underrepresented learners (Freeman et al. PNAS 2014). The progressive attrition observed in STEM education disproportionately affects first-generation students and minority populations. Our proposed educational approach specifically addresses retention challenges among these demographic groups, contributing to broader scientific workforce diversity.

List any related recommendations.

Successful execution of this initiative requires:

1. Redesigned and collaborative laboratory facilities to support expanded programming
2. Comprehensive digital and blended learning options to maximize enrollment flexibility and physical resource utilization
3. Contemporary industry-standard laboratory equipment and materials
4. Cross-disciplinary professional development communities featuring subject matter experts in pedagogical innovation
5. Exemplary instructional modules based on evidence-based practices that faculty can implement across various disciplines
6. Examination of the impact of AI on careers in the life sciences and a willingness to adapt to those changes brought on by AI.

Academic Program Review: (10) Prioritized Recommendations First Submission: Version by Aasi, Fazal on 04/20/2025 22:19

Provide a single, prioritized list of recommendations and needs for your program/department (drawn from your recommendations in sections 2-8). Include cost estimates and list the college strategic initiative that supports each recommendation.

Having facilities and equipment being kept in proper functional condition contributes to our students' fact that our program delivers a worthwhile and high-quality educational experience which potentially helps our program retain a higher percentage of students. Overall, the repair of plumbing issues should be addressed to prevent the occurring issues from getting worse. It's good practice to keep all solids out of the sinks when cleaning up after doing dissections that may help to advance our practices. Therefore, garbage disposals would help to ensure that the drains don't get clogged, thus saving the department money in the long run.

Beyond the most essentials, the priorities were chosen based on their impact and the number of students who would potentially benefit. The microscopes in anatomy need pointers in the eyepiece for students to show instructors features on their slides and vice versa. The installation of hand dryers in the bathrooms is an environmentally friendly, cost-saving option over paper towels. The bathrooms would be cleaner, and the dryers would reduce the burden on the maintenance staff who have to refill the paper towel dispensers. The classrooms need new air filters and MS 108 does not have heating or air conditioning, which makes it hard for students to focus on learning. A dishwasher would help to keep all the glassware clean. As MIS does not always carry projector bulbs and the bulbs that they purchase are too weak to see the projected images with lights on in the classroom, the department need to provide a few projector bulbs to keep on hand. We also need basic office supplies (markers, erasers, binder clips, staplers, etc.).

The availability of tutors and SI coaches is a well-established way to improve success and retention within a program. Although only a small subset of students in the Life Science program presents their research at the Annual Student Research Symposium, many students attend and learn from their peers. Repairing the door stoppings and ensuring that all doors can be locked from the inside is a safety issue that needs to be addressed. Installing an alarm system for the cold room door (MS 104) and retrofitting existing laboratory prep rooms with gas availability are equal priorities as they would enhance the functionality of our facilities. Most items would be used to support a new biotechnology program, which would potentially bring in more students. Microscopes need to be routinely serviced and repaired for optimal instruction as they are very heavily used in every Life Science course. The courses in our program depend on dissection specimens to provide students, many of whom are oriented towards careers in the health sciences, with hands on experience studying various tissues and organ systems. Likewise, the cost to dispose of hazardous materials generated during laboratory exercises is necessary to provide students with authentic, hands-on laboratory experiences. The dissection specimens primarily benefit students who are taking Biology, Microbiology, Anatomy or Physiology.

A properly functioning autoclave is essential to preparing sterile materials and reagents for our courses, particularly biology & Microbiology. Laptops could potentially support learning by giving students access to information and software while they are in the classroom. The hoods in MS 106 and 109 could be maintained so that they can be used by students, particularly in Biology and Microbiology. Buying Spirometer is an equal priority with purchasing a human or animal cadaver, organs and related supplies which would equip our Anatomy and Physiology labs with state-of-the-art equipment and bring a higher level of relevance to learning. The release time for one faculty member to write an NSF S-STEM grant is important to provide scholarships and support services to our students. Moreover, we may need to upgrade the electrical lines to support the equipment. Finally, the funding for the Faculty Learning Community could enhance the quality of teaching in our department and on campus.

10. Prioritized Recommendations

Recommendations	Cost Estimate	Strategic Initiatives
1. Repair sinks (MS 103, 109, 128, 108, and 129) and install garbage disposals and strainers in those lab drains	\$5,000	2.1
2. Install hand dryers in the bath/restrooms	\$ \$1,200	2.1
3. Purchase biotechnology reagents and consumables	\$2,000	1.1
4. Install pointer on all anatomy microscopes	\$600	1.1
5. Change air filters in all classrooms and repair heat/air conditioning in MS 108	\$1,000	2.1
6. Purchase a dishwasher	\$600	2.1
7. Purchase projector bulbs and office supplies	\$500	2.1
8. Hire tutors and SI coaches	\$13,500/yr	2.1, 2.2
9. Repair door stoppings and locks, add lock block to MS 103, 105, 106, 108, 128	\$5,000	2.1
10. Install alarm system for cold room door (MS 104)	\$1,000	2.1
11. Repair the Turn off light in MS 128	\$100	2.1
12. Purchase 8 Troemner™ Stainless Steel Class 7 Weight Sets	\$696	2.1
13. Purchase 8 Ohaus™ Navigator™ NV621 Balances	\$1,968	2.1
14. Purchase 8 Fisherbrand™ Bacti-Loop™ Micro-Sterilizers	\$3,167.60	2.1
15. Purchase biotechnology reagents and consumables	\$5,000	1.1
16. Purchase 8 Fisher brand™ accumet™ AE150 Benchtop pH	\$4,100	2.1
17. Purchase 2 Classroom Pipette Sets	\$8,398	1.1
18. Purchase YSI 2500 Biochemistry Analyzer	\$21,850	2.1

19. Microscope repair, parts, and service	\$12,000/yr	1.1
20. Purchase dissection specimens and other consumables	\$15,000	1.1
21 Hazardous waste disposal (e.g. dissected specimens)	\$3,000/yr	2.1
22. Autoclave repair and service contract	\$10,000	1.1
23. Purchase 40 iPads/laptops plus software for student use	\$25,000	2.1
24. Annual certification of hood (MS 106 and 109)	\$500/yr	2.1
25. Purchase Spirometers	\$2,000	1.3
26. Purchase dissecting animals/organs	\$2,500	1.1
27. Establish Faculty Learning Community and bring in speakers	\$3,000	1.4

