

Academic Program Review (Chemistry) Latest Version

Academic Program Review: (1) Overview of the program First Submission: Version by Nealy, Schetema on 06/04/2024 21:22

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

The mission of the Chemistry Department at Compton College (CC) is to prepare students with knowledge and skills to pursue further education in the chemical, physical, and health sciences. Students learn to engage in scientific inquiry, problem solving, and are actively engaged in their learning. The goals and mission of the department align with the mission of the college, which is to offer a quality, comprehensive educational program with supplementary student support services which aim to ensure the educational and professional success of the students in our diverse community.

The Chemistry Department offers four courses: Chemistry 104 (Beginning Chemistry), Chemistry 150 (General Chemistry I), Chemistry 152 (General Chemistry II), and Chemistry 102 (Fundamentals of Chemistry). Chemistry 104 is a preparatory course for the beginning of the lower division chemistry classes. Chemistry 150/152 is a year-long general chemistry series for STEM majors. Chemistry 102 is for students who plan to obtain an associate's degree in nursing (ADN), an allied health certificate, or transfer to a bachelor's or master's degree in nursing, or other health related degree programs. Currently, the Chemistry Department does not offer any degrees or certificates.

All of the courses offered at CC fulfill the general education requirements for physical science with a laboratory and are transferable to the University of California and California State University systems. Students taking chemistry at CC consists of an average of 72 % female, 17 % African American, and 70 % Latinx. The majority of the students, 56 %, are within the ages of 22-34, 24% are within 17-21 years old, and 11 % are within the ages of 35-39. About 61 % of the students are part-time students with 72 % taking their classes in the daytime.

Currently, the Chemistry Department has two full-time tenure track faculty and five adjunct instructors. The Chemistry faculty actively participates in campus-wide and division committees and activities, such as the Health and Safety Committee and the Institutional Effectiveness Committee. The faculty also meets to discuss the improvement of teaching strategies and incorporate technology in the classroom. The Chemistry department also participates and will continue to participate in the assessment of Students Learning Objectives (SLOs) and Program Level Objectives (PLOs), as well as program review and program planning. The findings from the assessments of the SLOs and PLOs help the faculty to make changes to teaching strategies accordingly, in order to improve the students' learning.

The Chemistry faculty at CC engages students to actively participate in their learning by using a variety of instructional methods and services to promote student success and create a positive learning environment, as well as a sense of community. Our faculty members completed professional development and training programs. Faculty members use various active learning methods to engage students. For example, students participate in peer teaching, group presentations, and various class activities. The laboratory experiments are designed to be performed in pairs (or groups) as well as individually for the students to learn a sense of belonging and most importantly to learn how to work collaboratively. Additionally, some of the sections of Chemistry 102, 104, and in the past 150 have assigned Supplemental Instruction (SI) or Embedded Coaches that work specifically with the students enrolled in these courses to help them succeed in the class. The quality and variety of educational services provided for the Chemistry students match the college's mission and strategic initiatives 1, 2, and 3.

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

The Chemistry department currently does not offer degrees or certificates. The department also offers three courses which may be chosen to fulfill the required physical science core courses for the A.S. degree in physical science, A. S. T. degree in physical education, and the general studies in kinesiology and wellness A.A. degree.

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

The Chemistry department continuously evaluates the curriculum and the relevance of courses through program review and planning to comply with the college's strategic initiatives 1, 2, and 3. The quality and variety of educational services provided for the Chemistry students match the college's mission and strategic initiatives 1, 2, and 3. The chemistry faculty continues to

develop new teaching strategies to improve the success of all students and their retention rates. One chemistry faculty member completed the Apple faculty scholars program, during which they learned strategies and best practices for incorporating Apple technology (MacBook, iPad, Apple TV) into classroom instruction such that it would assist with making student learning more dynamic. The chemistry faculty continuously updates the laboratory sections for each class. That chemistry faculty member have completed the Apple program and has implemented the learned teaching strategies into the courses. The remaining faculty plans to complete this program in the next offering period. The department continues to enhance their success through the use of technology by revising and/or writing new laboratory experiments in which technology will be utilized.

Discuss the status of recommendations from your previous program review.

1. Purchase license for Chem Draw Software for all faculty.

This recommendation is not been fulfilled. The faculty continues to have difficulty obtaining a quote from the company. We will continue to work with the company to fulfill this in the coming school year.

2. Repair the fault faucets in MS 228 and 231.

This recommendation has not been fulfilled. The department has submitted work orders almost every semester but the work is never completed and somehow it shows complete on the system even when none goes to the department to initiate the work. The laboratory technician and faculty have tirelessly tried to have this work started to no avail.

3. Work with facilities to have rooms clean more regularly.

This recommendation has been fulfilled. Faculty have requested to have the classrooms swept via email to facilities but do not receive a response and the classrooms are not cleaned. Faculty and even students have to clean the rooms themselves.

4. Have laboratory technician clean classrooms

Faculty needs to work with the laboratory technician to set up a schedule to have the classrooms and the stockroom clean.

5. Install lighting under cabinets

This recommendation has not been fulfilled. The need still exists.

6. Increase the number of sections with embedded coaches.

This recommendation has been fulfilled. During the pandemic most courses were taught remotely and faculty infrequently requested embedded coaches. There are only two sections with embedded coaches.

7. Offer a hybrid course for Chemistry 20 (now Chemistry 102)

This recommendation has not been fulfilled. The faculty requested to have at least one section offered as a hybrid course but administration denied the request. However, after the pandemic two sections of chemistry 102 and one section of chemistry 104 are currently being offered synchronously.

8. Develop an on-line tutoring system.

This recommendation was abandoned. The college already offers online tutoring through the Math and Science Center and NetTutor. The faculty decided there was no need to offer additional online tutoring services.

9. Increase budget to purchase and maintain necessary equipment for the added courses.

This recommendation has been fulfilled. The necessary budget was granted to supply the required equipment and supplies for all added courses.

10. Create educational videos.

This recommendation has not been fulfilled. The chemistry faculty plans to apply for grants to cover the cost of creating the educational videos in the future.

11. Create videos for laboratory techniques.

This recommendation has been fulfilled. The faculty did not create the videos, however they have utilized Labster or YouTube videos to supplement the laboratory techniques used in Chemistry 150 and 152.

12. Hire a student worker for the stockroom

This recommendation was abandoned. With the pandemic and the decrease in student enrollment, the department decided not to pursue this recommendation.

13. Purchase two GC-MS spectrometers

This recommendation has been placed on hold. The spectrometers are needed for Organic Chemistry. The faculty still wants to offer Organic Chemistry once new chemistry laboratory classrooms are built or modify the existing chemistry classrooms.

14. Purchase two FT-IR spectrometers.

This recommendation has been placed on hold. The spectrometers are needed for Organic Chemistry. The faculty still wants to offer Organic Chemistry once new chemistry laboratory classrooms are built or modify the existing chemistry classrooms.

15. Purchase 15 portable NMR spectrometers

This recommendation has been placed on hold. The spectrometers are needed for Organic Chemistry. The faculty still wants to offer Organic Chemistry once new chemistry laboratory classrooms are built or modify the existing chemistry classrooms.

16. Purchase 20 heating/stir plates

This recommendation has been placed on hold. The stir plates are needed for Organic Chemistry. The faculty still wants to offer Organic Chemistry once new chemistry laboratory classrooms are built or modify the existing chemistry classrooms.

17. Purchase 35 Organic Chemistry Glassware kits

This recommendation has been placed on hold. The kits are needed for Organic Chemistry. The faculty still wants to offer Organic Chemistry once new chemistry laboratory classrooms are built or modify the existing chemistry classrooms.

18. Installed overhead exhaust stations

This recommendation has been placed on hold. The overhead exhaust stations are needed for Organic Chemistry. The faculty still wants to offer Organic Chemistry once new chemistry laboratory classrooms are built or modify the existing chemistry classrooms.

19. Offer Organic Chemistry

This recommendation has been placed on hold. The faculty still wants to offer Organic Chemistry once new chemistry laboratory classrooms are built or modify the existing chemistry classrooms.

Academic Program Review: (2) Analysis of Research Data First Submission: Version by Nealy, Schetema on 06/04/2024 21:22

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

Overall, our students attend college mostly part-time (~60-70%) and take day classes (~70%) during both the Fall and Spring semesters. Students taking chemistry at CC consists of an average of 72 % female, 17 % African American, and 70 % Latinx. The majority of the students, 56 %, are within the ages of 22-34, 24% are within 17-21 years old, and 11 % are within the ages of 35-39. About 61 % of the students are part-time students with 72 % taking their classes in the daytime. This has been a consistent trend over the last five years, despite COVID protocols and scheduling adjustments. With the COVID pandemic causing a shift to classes being offered online, the trend remained that day classes were preferred over evening classes. The students at the Chemistry Department have a dramatic shift in educational goals from intent to transfer to an educational goal of enrichment. This decrease relative to the previous cycle might be because of COVID.



Student Counts

Age Group	Fall '17	Fall '18	Fall '19	Fall '20	Fall '21
Under 18		0% (<5)	0% (<5)	9% (21)	5% (11)
18-19	11% (36)	16% (56)	12% (29)	9% (21)	11% (24)
20-21	20% (64)	23% (78)	14% (33)	15% (37)	15% (33)
22-24	23% (72)	25% (87)	27% (64)	18% (45)	17% (37)
25-29	25% (78)	18% (61)	24% (57)	22% (53)	19% (41)
30-34	11% (35)	8% (29)	12% (28)	13% (32)	17% (36)
35-39	6% (18)	5% (16)	5% (12)	9% (22)	7% (14)
40-49	4% (12)	4% (13)	6% (14)	3% (8)	6% (12)
50-64	0% (<5)	1% (<5)	1% (<5)	3% (7)	3% (6)
Grand Total	100% (316)	100% (345)	100% (241)	100% (246)	100% (214)

Class Load	Fall '17	Fall '18	Fall '19	Fall '20	Fall '21
Full-time	22% (68)	17% (59)	35% (84)	33% (81)	28% (60)
Part-time	78% (248)	83% (286)	65% (157)	67% (165)	72% (154)
Grand Total	100% (316)	100% (345)	100% (241)	100% (246)	100% (214)

Education Goal	Fall '17	Fall '18	Fall '19	Fall '20	Fall '21
Basic Skills	1% (<5)	0% (<5)			2% (<5)
Degree/Cert Only	7% (21)	4% (14)	3% (8)	2% (6)	1% (<5)
Enrichment	3% (8)	1% (<5)	63% (152)	74% (182)	85% (181)
Intend to Transfer	32% (101)	36% (125)	28% (67)	17% (42)	7% (14)
Retrain/Recertify	2% (6)	3% (9)	1% (<5)		
Undecided/Unstated	56% (177)	56% (192)	5% (11)	7% (16)	6% (12)
Grand Total	100% (316)	100% (345)	100% (241)	100% (246)	100% (214)

Enrollments	Fall '17	Fall '18	Fall '19	Fall '20	Fall '21
Day	59% (188)	72% (248)	63% (152)	70% (171)	66% (141)
Evening	41% (128)	28% (97)	37% (89)	30% (75)	34% (73)



Student Counts

Age Group	Spring '18	Spring '19	Spring '20	Spring '21	Spring '22
Under 18		1% (<5)	1% (<5)	1% (<5)	2% (<5)
18-19	13% (41)	14% (53)	10% (26)	11% (23)	11% (13)
20-21	24% (72)	24% (88)	22% (58)	18% (39)	11% (14)
22-24	21% (63)	23% (84)	24% (64)	15% (33)	18% (22)
25-29	22% (66)	22% (83)	22% (60)	26% (56)	24% (29)
30-34	11% (34)	7% (27)	10% (27)	12% (27)	14% (17)
35-39	5% (15)	5% (18)	5% (13)	8% (18)	11% (14)
40-49	5% (14)	3% (12)	6% (15)	7% (15)	5% (6)
50-64		1% (<5)	1% (<5)	2% (5)	3% (<5)
65 and over					1% (<5)
Grand Total	100% (305)	100% (373)	100% (269)	100% (219)	100% (122)

Class Load	Spring '18	Spring '19	Spring '20	Spring '21	Spring '22
Full-time	19% (59)	24% (91)	33% (90)	34% (74)	39% (47)
Part-time	81% (246)	76% (282)	67% (179)	66% (145)	61% (75)
Grand Total	100% (305)	100% (373)	100% (269)	100% (219)	100% (122)

Education Goal	Spring '18	Spring '19	Spring '20	Spring '21	Spring '22
Basic Skills	1% (<5)	0% (<5)			
Degree/Cert Only	7% (21)	6% (22)	2% (6)	3% (6)	1% (<5)
Enrichment	2% (5)	3% (13)	76% (204)	84% (183)	88% (107)
Intend to Transfer	36% (111)	28% (105)	17% (46)	8% (17)	9% (11)
Retrain/Recertify	3% (8)	2% (8)	0% (<5)		
Undecided/Unstated	52% (158)	60% (224)	4% (12)	6% (13)	2% (<5)
Grand Total	100% (305)	100% (373)	100% (269)	100% (219)	100% (122)

Enrollments	Spring '18	Spring '19	Spring '20	Spring '21	Spring '22
Day	67% (204)	69% (258)	80% (215)	67% (147)	72% (88)
Evening	33% (101)	31% (115)	20% (54)	33% (72)	28% (35)

Student Counts

Gender	Fall '18	Fall '19	Fall '20	Fall '21	Spring '18	Spring '19	Spring '20	Spring '21	Spring '22
Female	68% (234)	68% (164)	70% (171)	70% (150)	69% (209)	69% (258)	69% (185)	70% (154)	72% (88)
Male	32% (111)	31% (74)	30% (73)	28% (59)	31% (96)	31% (115)	30% (80)	27% (59)	26% (32)
Unknown/n..		1% (<5)	1% (<5)	2% (5)			1% (<5)	3% (6)	2% (<5)
Grand Total	100% (345)	100% (241)	100% (246)	100% (214)	100% (305)	100% (373)	100% (269)	100% (219)	100% (122)

Ethnicity	Fall '18	Fall '19	Fall '20	Fall '21	Spring '18	Spring '19	Spring '20	Spring '21	Spring '22
American Indian ..		0% (<5)							
Asian	14% (47)	5% (13)	7% (17)	5% (11)	13% (40)	18% (69)	8% (21)	5% (12)	3% (<5)
Black or African ..	15% (53)	19% (45)	25% (61)	21% (45)	21% (65)	15% (55)	16% (43)	20% (44)	17% (21)
Latinx	65% (224)	66% (160)	61% (150)	68% (146)	58% (177)	57% (213)	66% (177)	62% (136)	70% (86)
Native Hawaiian..	1% (<5)	0% (<5)	1% (<5)	1% (<5)	1% (<5)	0% (<5)	0% (<5)	1% (<5)	
Two or More Rac..	1% (<5)	2% (5)	1% (<5)	2% (<5)	2% (7)	4% (14)	5% (13)	3% (7)	2% (<5)
Unknown/Non-R..		5% (11)	4% (9)	1% (<5)	0% (<5)	1% (<5)	3% (9)	4% (8)	2% (<5)
White	4% (15)	2% (5)	2% (<5)	2% (<5)	4% (13)	5% (19)	2% (5)	5% (10)	4% (5)
Grand Total	100% (345)	100% (241)	100% (246)	100% (214)	100% (305)	100% (373)	100% (269)	100% (219)	100% (122)

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

There was an anticipated high rate of excused withdrawals at the beginning of the COVID pandemic (2020), as most students were not prepared to switch to online learning and there was a high degree of uncertainty regarding the pandemic and its duration. As time progressed and online learning became a normal modality, overall student academic performance was better than before the pandemic and the percentages of withdrawal decreased. This may be due to better studying habits when not in physical classrooms, more focus when at home, or additional resources students had access to, such as recorded lectures and online office hours. The most challenging class for student success has always been Chem 102, as this is the chemistry requirement for nursing majors, and many of our students are nursing majors. There is always a trend of a majority of students receiving passing grades A, B, and C in the upper level

chemistry classes, Chem 150 and Chem 152, as the students enrolled in these classes are planning to transfer to four year universities with a STEM major.

Academic Y..	Course ID	Grade				Grade				W	Grand Total	
		A	B	C	D	EW	F	IC	IF			NP
2017-18	CHEM-102	30 (21%)	27 (19%)	23 (16%)	6 (4%)		24 (17%)				33 (23%)	143 (100%)
	CHEM-104	7 (11%)	15 (24%)	13 (21%)	<5 (5%)		10 (16%)				14 (23%)	62 (100%)
	CHEM-150	10 (15%)	14 (22%)	14 (22%)	<5 (6%)		<5 (5%)				20 (31%)	65 (100%)
	CHEM-152	23 (66%)	6 (17%)	<5 (11%)			<5 (3%)				<5 (3%)	35 (100%)
2018-19	CHEM-102	63 (34%)	51 (27%)	24 (13%)	13 (7%)		12 (6%)	<5 (1%)	<5 (1%)		22 (12%)	187 (100%)
	CHEM-104	24 (30%)	17 (22%)	8 (10%)	<5 (3%)		8 (10%)				20 (25%)	79 (100%)
	CHEM-150	29 (43%)	9 (13%)	11 (16%)	<5 (1%)		5 (7%)				13 (19%)	68 (100%)
	CHEM-152	17 (40%)	17 (40%)	<5 (10%)			<5 (2%)				<5 (7%)	42 (100%)
2019-20	CHEM-102	58 (40%)	33 (23%)	14 (10%)	5 (3%)	25 (17%)	8 (6%)				<5 (1%)	144 (100%)
	CHEM-104	7 (17%)	10 (24%)	<5 (10%)	<5 (10%)	9 (22%)	6 (15%)			<5 (2%)		41 (100%)
	CHEM-150	11 (21%)	11 (21%)	11 (21%)	<5 (2%)	13 (25%)	<5 (6%)			<5 (2%)	<5 (4%)	53 (100%)
	CHEM-152	23 (74%)	6 (19%)			<5 (6%)						31 (100%)
2020-21	CHEM-102	36 (34%)	31 (29%)	14 (13%)	5 (5%)	<5 (1%)	7 (7%)				13 (12%)	107 (100%)
	CHEM-104	8 (21%)	7 (18%)	<5 (10%)	<5 (3%)		6 (15%)				13 (33%)	39 (100%)
	CHEM-150	22 (47%)	10 (21%)	6 (13%)	<5 (4%)		<5 (9%)				<5 (6%)	47 (100%)
	CHEM-152	8 (31%)	7 (27%)	5 (19%)	<5 (4%)	<5 (4%)	<5 (4%)				<5 (12%)	26 (100%)
2021-22	CHEM-102	21 (28%)	23 (31%)	12 (16%)	8 (11%)		<5 (4%)				8 (11%)	75 (100%)
	CHEM-104	<5 (6%)	<5 (12%)	5 (29%)			5 (29%)				<5 (24%)	17 (100%)
	CHEM-150	6 (24%)	9 (36%)	<5 (8%)	<5 (8%)		<5 (8%)				<5 (16%)	25 (100%)
	CHEM-152	<5 (33%)		<5 (17%)							<5 (50%)	6 (100%)

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

The overall success rate was trending upward since the 2017-2018 academic year. However, the 2021-2022 academic year showed a marked decline in success rates. Again, this decline can be contributed, at least in part, to the COVID pandemic occurring during this timeframe. The success rates for female students are consistently higher than for male students for all of the academic years from 2017 to 2022. The success rates for African-American students are consistently lower than for all of the other student ethnicity groups for all of the academic years from 2017 to 2022. Students between the ages of 30-39 tend to have a greater success rate than students in the other age groups. Full time students consistently have a lower success rate compared to part-time students for all of the years of data reported here.



Overall Success and Retention

Success Rate by Course

Course ID	2017-18	2018-19	2019-20	2020-21	2021-22
CHEM-102	64%(328)	71%(368)	75%(287)	76%(245)	70%(212)
CHEM-104	61%(159)	64%(165)	57%(97)	61%(96)	46%(57)
CHEM-150	69%(99)	70%(127)	72%(95)	76%(89)	65%(55)
CHEM-152	94%(35)	89%(61)	94%(31)	71%(35)	50%(14)
Grand Total	66%(621)	71%(721)	72%(510)	73%(465)	64%(338)

Unique Students

Academic Year	
2017-18	568
2018-19	654
2019-20	470
2020-21	422
2021-22	303
Grand Total	2131

Program
Chemistry

Academic Year
All

Course ID
All

Gender
All

Ethnicity
All

Age Group
All

Class Load
All

Education Goal
All

Overall Success Rate

Academic Year	
2017-18	66% (621)
2018-19	71% (721)
2019-20	72% (510)
2020-21	73% (465)
2021-22	64% (338)
Grand Total	69% (2655)

Overall Retention Rate

Academic Year	
2017-18	79% (621)
2018-19	83% (721)
2019-20	82% (510)
2020-21	83% (465)
2021-22	84% (338)
Grand Total	82% (2655)



Success Rates

Gender	Fall '20	Fall '21	Spring '18	Spring '19	Spring '20	Spring '21	Spring '22	Program
Female	75%(171)	61%(151)	63%(209)	75%(260)	76%(185)	74%(154)	69%(89)	Chemistry
Male	70%(73)	64%(59)	56%(96)	70%(116)	60%(80)	68%(59)	66%(32)	
Unknown/non-res..	100%(<5)	60%(5)			25%(<5)	67%(6)	100%(<5)	Term
								Multiple values

Ethnicity	Fall '20	Fall '21	Spring '18	Spring '19	Spring '20	Spring '21	Spring '22	Gender
American Indian o..								All
Asian	100%(17)	82%(11)	75%(40)	86%(69)	90%(21)	83%(12)	100%(<5)	Ethnicity
Black or African A..	67%(61)	64%(45)	49%(65)	51%(55)	67%(43)	66%(44)	55%(22)	All
Latinx	75%(150)	58%(147)	62%(177)	72%(216)	67%(177)	71%(136)	71%(86)	Age Group
Native Hawaiian o..	33%(<5)	50%(<5)	50%(<5)	100%(<5)	100%(<5)	100%(<5)		All
Two or More Races	50%(<5)	100%(<5)	57%(7)	100%(14)	92%(13)	86%(7)	67%(<5)	Class Load
Unknown/Non-Re..	78%(9)	100%(<5)	0%(<5)	100%(<5)	56%(9)	75%(8)	33%(<5)	All
White	50%(<5)	75%(<5)	77%(13)	79%(19)	100%(5)	80%(10)	80%(5)	

Age Group	Fall '20	Fall '21	Spring '18	Spring '19	Spring '20	Spring '21	Spring '22	Education Goal
18-19	57%(21)	46%(24)	61%(41)	72%(53)	65%(26)	48%(23)	38%(13)	All
20-21	73%(37)	33%(33)	61%(72)	76%(88)	71%(58)	67%(39)	79%(14)	
22-24	67%(45)	65%(37)	73%(63)	70%(86)	67%(64)	73%(33)	77%(22)	
25-29	77%(53)	56%(41)	56%(66)	75%(84)	75%(60)	86%(56)	52%(29)	
30-34	78%(32)	81%(37)	56%(34)	59%(27)	59%(27)	74%(27)	78%(18)	
35-39	77%(22)	79%(14)	47%(15)	94%(18)	85%(13)	72%(18)	86%(14)	
40-49	75%(8)	83%(12)	57%(14)	67%(12)	87%(15)	80%(15)	100%(6)	
50-64	43%(7)	67%(6)		50%(<5)	33%(<5)	20%(5)	50%(<5)	
65 and over							0%(<5)	
Under 18	95%(21)	82%(11)		100%(<5)	67%(<5)	100%(<5)	100%(<5)	

Class Load	Fall '20	Fall '21	Spring '18	Spring '19	Spring '20	Spring '21	Spring '22
Full-time	67%(81)	48%(61)	58%(59)	67%(94)	61%(90)	61%(74)	60%(47)
Part-time	77%(165)	68%(154)	62%(246)	75%(282)	75%(179)	78%(145)	74%(76)



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

The overall retention rates remained high over the previous 5 years, between 79 and 84%, and have a generally upward trend. During that time, the overall retention rates were all greater than the overall success rates. Equity gaps could not be addressed based on the data that we were able to retrieve.



Overall Success and Retention

Success Rate by Course

Course ID	2017-18	2018-19	2019-20	2020-21	2021-22
CHEM-102	64%(328)	71%(368)	75%(287)	76%(245)	70%(212)
CHEM-104	61%(159)	64%(165)	57%(97)	61%(96)	46%(57)
CHEM-150	69%(99)	70%(127)	72%(95)	76%(89)	65%(55)
CHEM-152	94%(35)	89%(61)	94%(31)	71%(35)	50%(14)
Grand Total	66%(621)	71%(721)	72%(510)	73%(465)	64%(338)

Unique Students

Academic Year	
2017-18	568
2018-19	654
2019-20	470
2020-21	422
2021-22	303
Grand Total	2131

Program
Chemistry

Academic Year
All

Course ID
All

Gender
All

Ethnicity
All

Overall Success Rate

Academic Year	
2017-18	66% (621)
2018-19	71% (721)
2019-20	72% (510)
2020-21	73% (465)
2021-22	64% (338)
Grand Total	69% (2655)

Age Group
All

Class Load
All

Education Goal
All

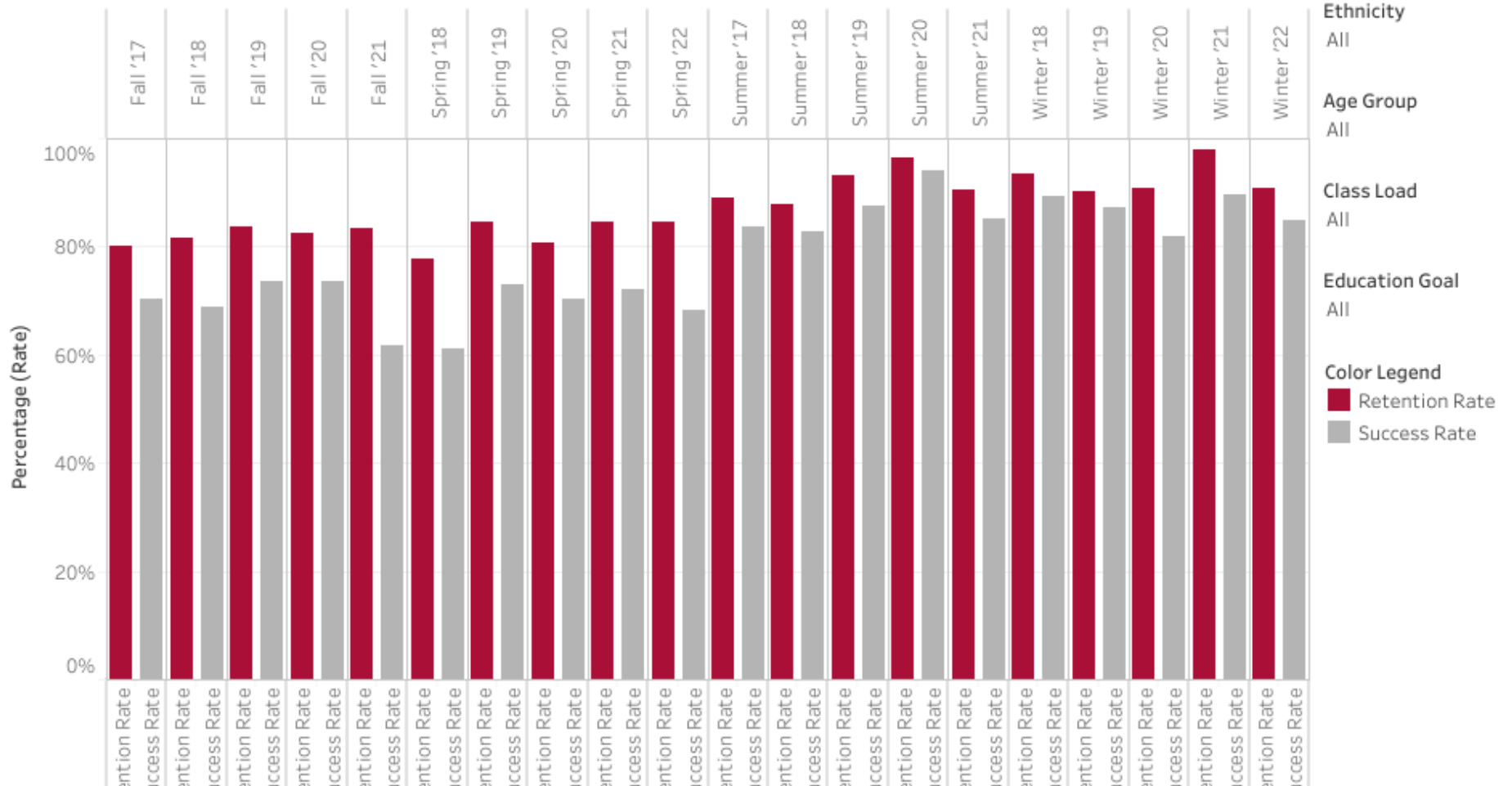
Overall Retention Rate

Academic Year	
2017-18	79% (621)
2018-19	83% (721)
2019-20	82% (510)
2020-21	83% (465)
2021-22	84% (338)
Grand Total	82% (2655)



Success Rates

Education Goal	Summer '19	Summer '20	Summer '21	Winter '18	Winter '19	Winter '20	Winter '21	Winter '22	Program
Basic Skills				100%(<5)					Chemistry
Degree/Cert Only	71%(7)	100%(<5)	100%(<5)	67%(<5)	60%(5)	100%(<5)			
Enrichment	100%(13)	93%(74)	85%(67)	100%(<5)	100%(<5)	78%(37)	90%(41)	84%(32)	Term
Intend to Transfer	86%(44)	100%(8)	75%(<5)	88%(25)	76%(21)	100%(<5)	83%(6)	100%(<5)	All
Retrain/Recertify	100%(5)			100%(<5)	100%(<5)				
Undecided/Unstated	75%(<5)		100%(<5)	91%(43)	97%(31)	100%(<5)	100%(<5)		Gender
									All

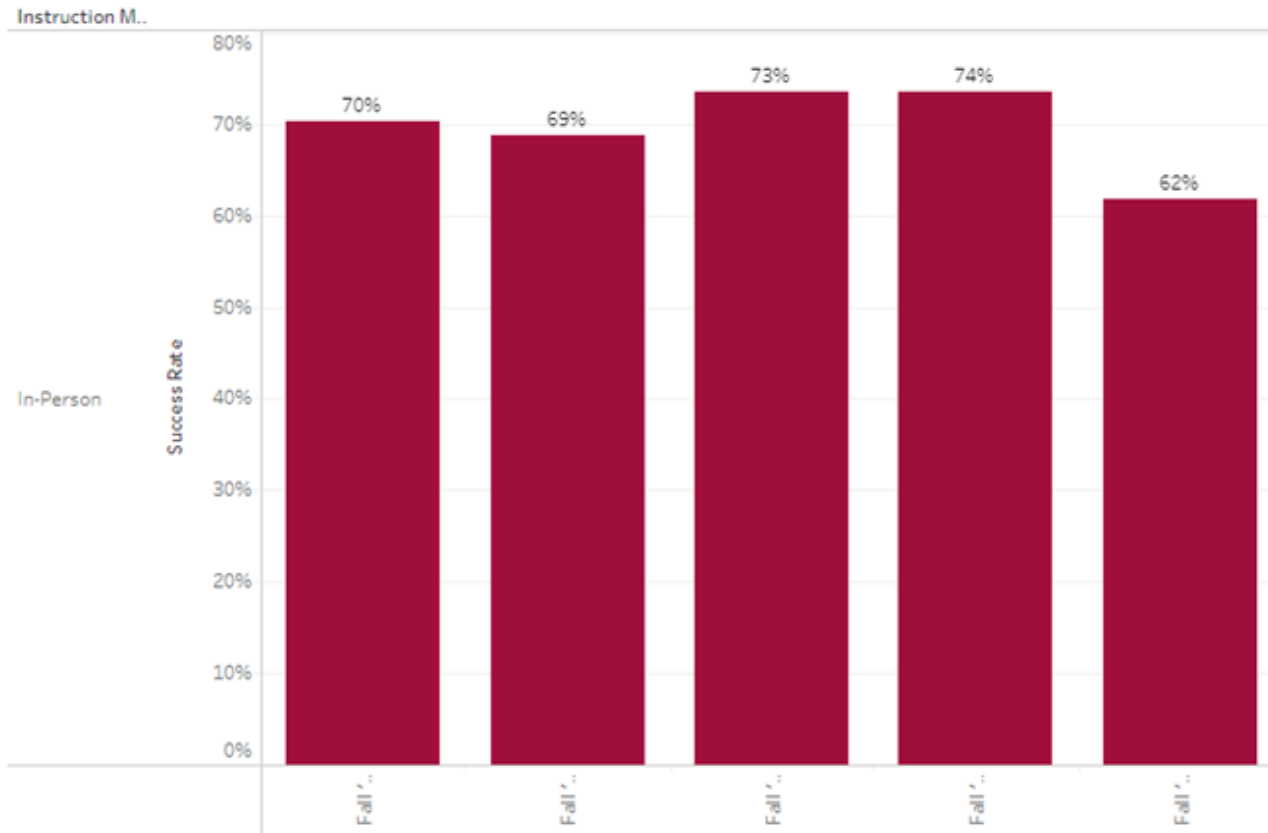


Synchronous teaching was the only modality available in Spring 21, and its success rate is comparable to the in-person classes offered in previous years. In the Spring of 22, when both modalities were offered, there was a higher percentage of students in synchronous classes only because there were more synchronous classes offered, but the success rates for both modalities is nearly the same.



Success by Modality

Instruction Method	Fall '17	Fall '18	Fall '19	Fall '20	Fall '21
In-Person	70%(316)	69%(345)	73%(241)	74%(246)	62%(215)



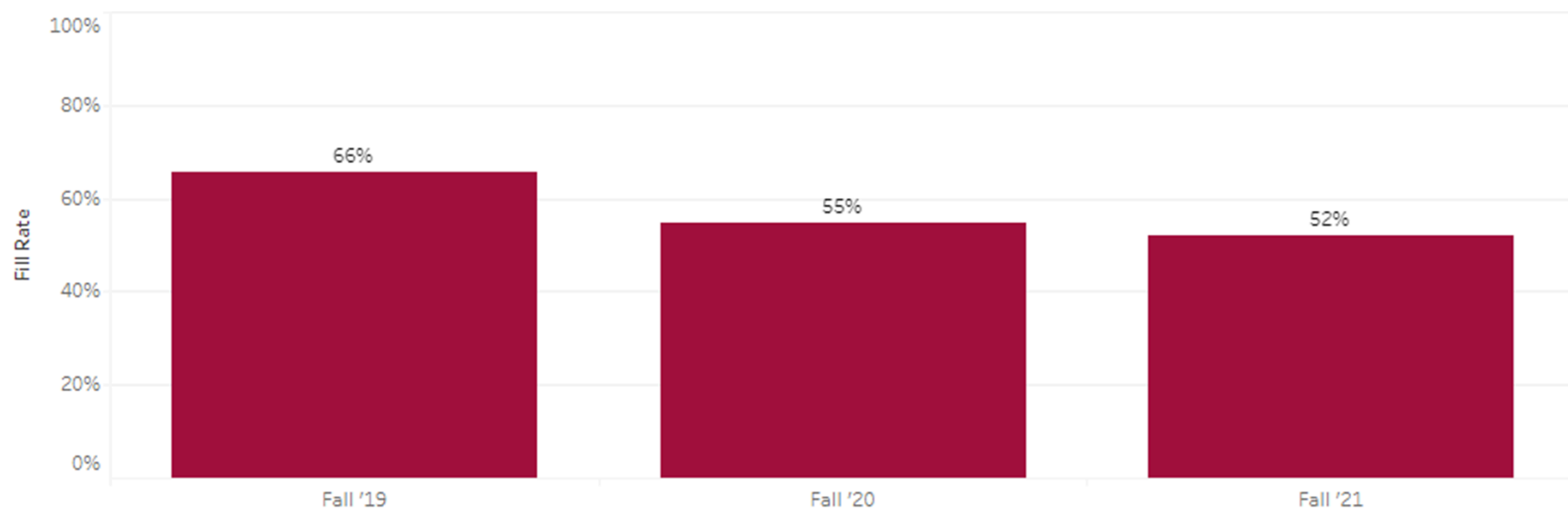
For the Fall semesters, only in-person data is available, and the lower number of students in the recent years enrolled in in-person classes is due to less in-person classes being offered during the COVID pandemic. In terms of success in the classes, the success rate of students enrolled in in-person classes has remained consistent in the last five years.

The drop in success rates from 2020 to 2021 is attributed to the high rate of students drop out due to the COVID pandemic.

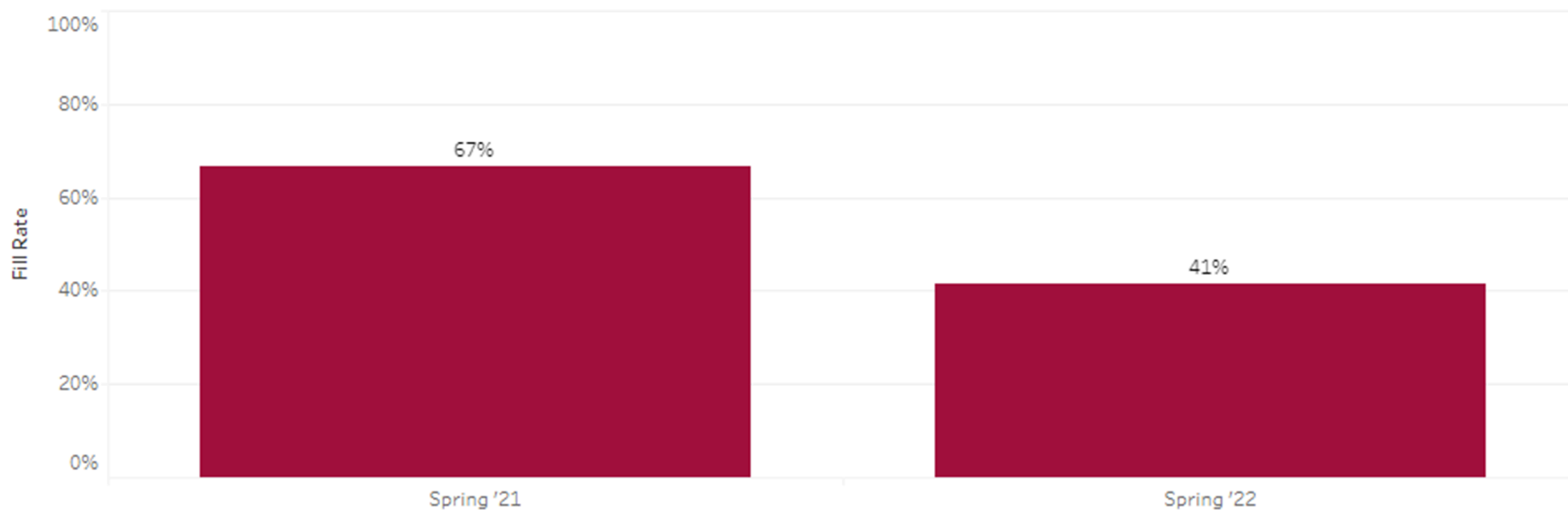
Fill Rates: Discuss course sections offered and fill rates. Analyze any applicable trends.

The fill rate for all of the courses and sections, except the Fall '19 Chem102 section and the Spring '21 Chem 152 section, have a fill rate of below 70%. There is no known explanation for the 2 outliers.

Course Id	Fall '19	Fall '20	Fall '21
CHEM-102	81% (125)	62% (116)	61% (114)
CHEM-104	41% (38)	49% (46)	52% (32)
CHEM-150	65% (39)	57% (34)	40% (25)
CHEM-152		23% (7)	23% (7)



Course Id	Spring '21	Spring '22
CHEM-102	66% (143)	51% (73)
CHEM-104	53% (49)	26% (16)
CHEM-150	69% (84)	42% (21)
CHEM-152	85% (53)	15% (<5)



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

The most filled sections offered in the Chemistry Department are Monday through Thursday during the day for both spring and fall terms. There has been a consistently lower percentage of evening enrollments compared to day enrollments. Our scheduling is meeting the demand and availability of our student body. Most students work in the evenings, and taking day classes is ideal.

Enrollments	Fall '17	Fall '18	Fall '19	Fall '20	Fall '21
Day	59% (188)	72% (248)	63% (152)	70% (171)	66% (141)
Evening	41% (128)	28% (97)	37% (89)	30% (75)	34% (73)

Enrollments	Spring '18	Spring '19	Spring '20	Spring '21	Spring '22
Day	67% (204)	69% (258)	80% (215)	67% (147)	72% (88)
Evening	33% (101)	31% (115)	20% (54)	33% (72)	28% (35)

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

The chemistry department does not currently offer any degrees or certificates. The degree and certificate data below are for the college, and not specifically for the chemistry program. There is no data associated with how many of the total degrees and certificates earned required chemistry courses for completion.

Education Goal	Fall '17	Fall '18	Fall '19	Fall '20	Fall '21
Basic Skills	1% (<5)	0% (<5)			2% (<5)
Degree/Cert Only	7% (21)	4% (14)	3% (8)	2% (6)	1% (<5)
Enrichment	3% (8)	1% (<5)	63% (152)	74% (182)	85% (181)
Intend to Transfer	32% (101)	36% (125)	28% (67)	17% (42)	7% (14)
Retrain/Recertify	2% (6)	3% (9)	1% (<5)		
Undecided/Unstated	56% (177)	56% (192)	5% (11)	7% (16)	6% (12)
Grand Total	100% (316)	100% (345)	100% (241)	100% (246)	100% (214)

Education Goal	Spring '18	Spring '19	Spring '20	Spring '21	Spring '22
Basic Skills	1% (<5)	0% (<5)			
Degree/Cert Only	7% (21)	6% (22)	2% (6)	3% (6)	1% (<5)
Enrichment	2% (5)	3% (13)	76% (204)	84% (183)	88% (107)
Intend to Transfer	36% (111)	28% (105)	17% (46)	8% (17)	9% (11)
Retrain/Recertify	3% (8)	2% (8)	0% (<5)		
Undecided/Unstated	52% (158)	60% (224)	4% (12)	6% (13)	2% (<5)
Grand Total	100% (305)	100% (373)	100% (269)	100% (219)	100% (122)

List any related recommendations

It would be beneficial to pursue the possibility of a hybrid course. By offering a hybrid course, where the lecture is online and the laboratory and discussion hour is in-person, the department would be able to increase the number of courses and sections offered and better engage and service our students. In addition, we would be able to offer courses in a modality that is comparable to other local colleges who offer hybrid courses.

Academic Program Review: (3) Curriculum First Submission: Version by Nealy, Schetema on 06/04/2024 21:22

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

Course Number	Course Title	Course Review Date	Transferability
Chem 102	Fundamentals of Chemistry	2024-2025	Yes
Chem 104	Beginning Chemistry	2022-2023	Yes
Chem 150	General Chemistry I	2024-2025	Yes
Chem 152	General Chemistry II	2025-2026	Yes

Explain any course additions to current course offerings.

The Chemistry department has not made any additions to the course offerings during the review period.

Explain any course deletions and inactivations from current course offerings.

The Chem 104H, the beginning chemistry course with honors, was inactivated due to low enrollment.

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

4 chemistry courses are offered in distance education. 3 sections of Chem 102 and 1 section of Chem 104 are offered as remote synchronous distance education courses. Currently, the chemistry department does not offer hybrid courses.

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

The courses meet students' transfer and career training needs. 79% of chemistry students surveyed revealed that they are taking their chemistry course as a requirement of their major or as a general education requirement. All of the in-person sections of each course offered meet the transfer requirements for the CSU and UC systems. The online Chem 102 courses offer a more options that fit students' scheduling needs for those who do not plan to transfer to the CSU or UC systems, but need a chemistry course which can count toward their degree obtained at Compton College.

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.

The chemistry department does not currently offer any degrees or certificates. There are currently no plans to offer any degrees or certificates. However, we have set a reasonable goal to return our overall success rate to 70-75% by 2026.

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, there are no licensure/certification exams required for program completion or career entry.

List any related recommendations.

1. Purchase ChemDraw for faculty and staff to modify classroom material.
2. Develop course curriculum for organic chemistry.

Academic Program Review: (4) Assessment of Student Learning Outcomes (SLO's) First Submission: Version by Nealy,

Schetema on 06/04/2024 21:22

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

NATURAL SCIENCES
Institutional (ILO), Program (PLO), and Course (SLO) Alignment

Program: Chemistry		Number of Courses: 8	Date Updated: 10.02.2014	Submitted by: T. Jim Noyes, ext. 3356			
ILOs	1. Critical Thinking <i>Students apply critical, creative and analytical skills to identify and solve problems, analyze information, synthesize and evaluate ideas, and transform existing ideas into new forms.</i>	2. Communication <i>Students effectively communicate with and respond to varied audiences in written, spoken or signed, and artistic forms.</i>	3. Community and Personal Development <i>Students are productive and engaged members of society, demonstrating personal responsibility, and community and social awareness through their engagement in campus programs and services.</i>	4. Information Literacy <i>Students determine an information need and use various media and formats to develop a research strategy and locate, evaluate, document, and use information to accomplish a specific purpose. Students demonstrate an understanding of the legal, social, and ethical aspects related to information use.</i>			
	SLO-PLO-ILO ALIGNMENT NOTES: Mark boxes with an 'X' if: SLO/PLO is a major focus or an important part of the course/program; direct instruction or some direct instruction is provided; students are evaluated multiple times (and possibly in various ways) throughout the course or are evaluated on the concepts once or twice within the course. DO NOT mark with an 'X' if: SLO/PLO is a minor focus of the course/program and some instruction is given in the area but students are not formally evaluated on the concepts; or if the SLO/PLO is minimally or not at all part of the course/program.						
PLOs				PLO to ILO Alignment <i>(Mark with an X)</i>			
				1	2	3	4
PLO #1 Equation Writing Students will be able to express chemical reaction word problems in the correct format.				X	X		
PLO #2 Structural Representations of Compounds Students will be able to represent the structures of compounds based on chemical bonding theory.				X	X		
PLO #3 Lab Safety Students will take the necessary precautions to ensure proper laboratory safety.					X	X	

SLOs	SLO to PLO Alignment			COURSE to ILO Alignment			
	<i>(Mark with an X)</i>			<i>(Mark with an X)</i>			
	P1	P2	P3	1	2	3	4
CHEM 1A General Chemistry I: SLO #1 Equation Writing On a written exercise, given the names of chemical compounds, students will be able to write the correct reactant formulas, states of matter (when required), identify reaction type, predict the product formulas and balance the chemical equation.	X						
CHEM 1A General Chemistry I: SLO #2 Structural Representations of Compounds Students will be able to create (via molecular models or drawings) accurate representations of compounds. The representations will contain appropriate bonds, lone pairs, and geometry.		X		X	X	X	
CHEM 1A General Chemistry I: SLO #3 Content Knowledge (Mitosis) Students will adhere to safety protocol in the laboratory regarding eye protection. Students will follow the proper procedure regarding wearing goggles in the laboratory, and keeping them on to protect their eyes.			X				
CHEM 2A General Chemistry II: SLO #1 Equation Writing On a written exercise, given the names of chemical compounds, students will be able to write the correct reactant formulas, states of matter (when required), identify reaction type, predict the product formulas and balance the chemical equation.	X						
CHEM 2A General Chemistry II: SLO #2 Structural Representations of Compounds Students will be able to create (via molecular models or drawings) accurate representations of compounds. The representations will contain appropriate bonds, lone pairs, and geometry.		X		X	X	X	
CHEM 2A General Chemistry II: SLO #3 Content Knowledge (Mitosis) Students will adhere to safety protocol in the laboratory regarding eye protection. Students will follow the proper procedure regarding wearing goggles in the laboratory, and keeping them on to protect their eyes.			X				
CHEM 20 Fundamentals of Chemistry: SLO #1 Chemical Formulas of Reactants On a written exercise, given the chemical formulas of reactants, students will be able to write the correct formulas of products, identify the reaction type and balance the equation.	X						
CHEM 20 Fundamentals of Chemistry: SLO #2 Molecular Models and Drawings Students will be able to create (via molecular models or drawings) accurate representations of compounds. The representations will contain appropriate bonds, lone pairs, and geometry.		X		X	X	X	
CHEM 20 Fundamentals of Chemistry: SLO #3 Safety Protocol Students will adhere to safety protocol in the laboratory regarding eye protection. Students will follow the proper procedure regarding wearing goggles in the laboratory, and keeping them on to protect their eyes.			X				

SLOs	SLO to PLO Alignment			COURSE to ILO Alignment			
	<i>(Mark with an X)</i>			<i>(Mark with an X)</i>			
	P1	P2	P3	1	2	3	4
CHEM 21A Survey of General and Organic Chemistry: SLO #1 Names of Chemical Compounds On a written exercise, given the names of chemical compounds, students will be able to write the correct reactant formulas, states of matter (when required), identify reaction type, predict the product formulas and balance the chemical equation.	X						
CHEM 21A Survey of General and Organic Chemistry: SLO #2 Molecular Models and Drawings Students will be able to create (via molecular models or drawings) accurate representations of compounds. The representations will contain appropriate bonds, lone pairs, and geometry.		X		X	X	X	
CHEM 21A Survey of General and Organic Chemistry: SLO #3 Safety Protocol Students will adhere to safety protocol in the laboratory regarding eye protection. Students will follow the proper procedure regarding wearing goggles in the laboratory, and keeping them on to protect their eyes.			X				
CHEM 21B Survey of Organic and Biochemistry: SLO #1 Structures of Reactants for a Reaction On a written exercise, given the structures of reactants for a reaction, students will be able to write the correct structures of products and identify the reaction type.	X						
CHEM 21B Survey of Organic and Biochemistry: SLO #2 Molecular Models and Drawings Students will be able to create (via molecular models or drawings) accurate representations of compounds. The representations will contain appropriate bonds, lone pairs, and geometry.		X		X	X	X	
CHEM 21B Survey of Organic and Biochemistry: SLO #3 Safety Protocol Students will adhere to safety protocol in the laboratory regarding eye protection. Students will follow the proper procedure regarding wearing goggles in the laboratory, and keeping them on to protect their eyes.			X				
CHEM 4 Beginning Chemistry: SLO #1 Equation Writing On a written exercise, given the names of chemical compounds, students will be able to write the correct reactant formulas, states of matter (when required), identify reaction type, predict the product formulas and balance the chemical equation.	X						
CHEM 4 Beginning Chemistry: SLO #2 Structural Representations of Compounds Students will be able to create (via molecular models or drawings) accurate representations of compounds. The representations will contain appropriate bonds, lone pairs, and geometry.		X		X	X	X	
CHEM 4 Beginning Chemistry: SLO #3 Lab Safety Students will adhere to safety protocol in the laboratory regarding eye protection. Students will follow the proper procedure regarding wearing goggles in the laboratory, and keeping them on to protect their eyes.			X				

SLOs	SLO to PLO Alignment			COURSE to ILO Alignment			
	<i>(Mark with an X)</i>			<i>(Mark with an X)</i>			
	P1	P2	P3	1	2	3	4
CHEM 7A Organic Chemistry I: SLO #1 Equation Writing On a written exercise, given the structures of reactants for a reaction, students will be able to write the correct structures of products and identify the reaction type.	X			X	X	X	
CHEM 7A Organic Chemistry I: SLO #2 Structural Representations of Compounds Students will be able to create (via molecular models or drawings) accurate representations of compounds. The representations will contain appropriate bonds, lone pairs, and geometry.		X					
CHEM 7A Organic Chemistry I: SLO #3 Lab Safety Students will adhere to safety protocol in the laboratory regarding eye protection. Students will follow the proper procedure regarding wearing goggles in the laboratory, and keeping them on to protect their eyes.			X				
CHEM 7B Organic Chemistry II: SLO #1 Equation Writing On a written exercise, given the structures of reactants for a reaction, students will be able to write the correct structures of products and identify the reaction type.	X			X	X	X	
CHEM 7B Organic Chemistry II: SLO #2 Structural Representations of Compounds Students will be able to create (via molecular models or drawings) accurate representations of compounds. The representations will contain appropriate bonds, lone pairs, and geometry.		X					
CHEM 7B Organic Chemistry II: SLO #3 Lab Safety Students will adhere to safety protocol in the laboratory regarding eye protection. Students will follow the proper procedure regarding wearing goggles in the laboratory, and keeping them on to protect their eyes.			X				

Provide a timeline for your course and program level SLO assessments.

The college does not yet have a timeline for course and program level SLO assessment, but it is being developed.

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

SLO data has been collected for each student, on each SLO, in every class since the adoption of ELumen. Course reports analyzing this data will be completed before the next program review cycle.

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.

The SLO assessment results for Chemistry 102 have been completed every semester for the past four years. The results shows that 67% to 80% of students assessed for SLO #1 successfully completed the assessment, 71% to 84% of students successfully completed SLO #2, but only 19% to 40% successfully passed SLO #3. Some of the faculty has provided more in-class activities to help students improved their learning in chemical nomenclature; which is one of the key concepts to successfully complete SLO #1. We believe this has helped since the successful completion percentage has risen by 11%. We are concerned about the low passing percentage for SLO #3. More emphasis needs to be placed on safety protocols and more immediate intervention needs to be taken when students are working in the laboratory.

A tremendous improvement has been observed for Chemistry 104 students competing SLO #1. There has been a 42% increase in the past three years. This is in part because students have been encouraged to practice nomenclature using different application on their phones, such as Chemical Formulas Quiz, to name compounds. There has also been a 47% increase in students successfully completed SLO #2. The chemistry faculty has noticed that since students have access to the recorded lectures, most students review the material and this has helped them better understand how to correctly construct Lewis structures. After one section of Chemistry 104 has been taught in-person, there has been a 51% increase in students correctly wearing safety glasses and completing SLO#3.

The mean success rate for the SLO #1 for Chemistry 150 is 80%. This is very typical and higher than the set value for chemistry. Most of the chemistry 150 students have completed chemistry 104 and have had more practice with topics in chemistry. We see the same results for SLO #2. The successful completion for SLO#3 however is lower, 71%. This is in part because most students did not adhere to safely wearing their protective gear right after the pandemic. The semester after the pandemic, there was only a 26% success rate. The other semesters, however, the success rate was at least 72%.

All of the students enrolled in Chemistry 152 since Fall 2022 have successfully completed all SLOs. There was 100% success rate for all three. This is in part because the students have taken more than chemistry and/or science class and are very proficient in studying and following safety rules. It is also helpful that the chemistry faculty tries to teach both chemistry 150 followed by chemistry 152 in order for the students to have continuity on the same learning styles.

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

The chemistry faculty have agreed to assess the SLOs close to the time when we introduce the topics covered by the SLOs. In the past, the faculty has worked together to develop practice worksheets and review worksheets that directly address the SLOs/PLOs. We have exchanged strategies to better discuss the topics in class. The faculty have utilized the early alert system and CANVAS to help students track their progress in the courses in an effort to improve the success rate.

List any related recommendations.

1. Use videos which review the important concepts in each class and students can access on Canvas.
2. Have more in-class worksheets and activities for students to review and learn these objectives.
3. Create a chemistry Sharepoint repository to upload worksheets and strategies for both full-time and adjunct faculty to access.
4. Assess progress once a year and make necessary changes to improve student learning.

Academic Program Review: (5) Analysis of Student Feedback First Submission: Version by Nealy, Schetema on 06/04/2024 21:22

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

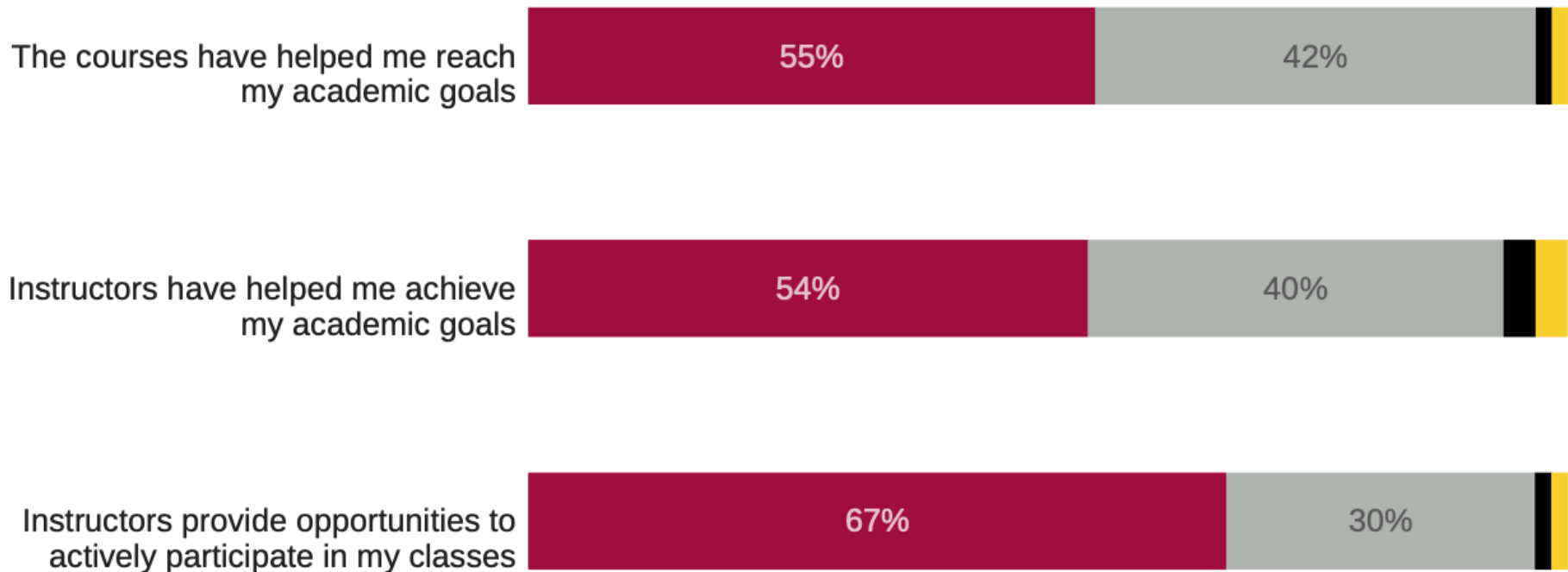
The students surveyed have expressed feeling supported academically, with 94% feeling that their instructors helped them achieve their academic goals and 97% feeling that their instructors provide opportunities for them to participate in class. 91% of the students surveyed feel a sense of community in this program. The students surveyed agree that the chemistry department supports them through offering the courses that they need, with 79% of the students surveyed taking their chemistry course as a requirement of their major or as a general education requirement.

The students surveyed have identified some skills and challenges that they could use more assistance with. Those that can potentially be addressed by the chemistry department are test anxiety management, study groups, and note taking techniques.

Academic Support and Development

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

66 Responses



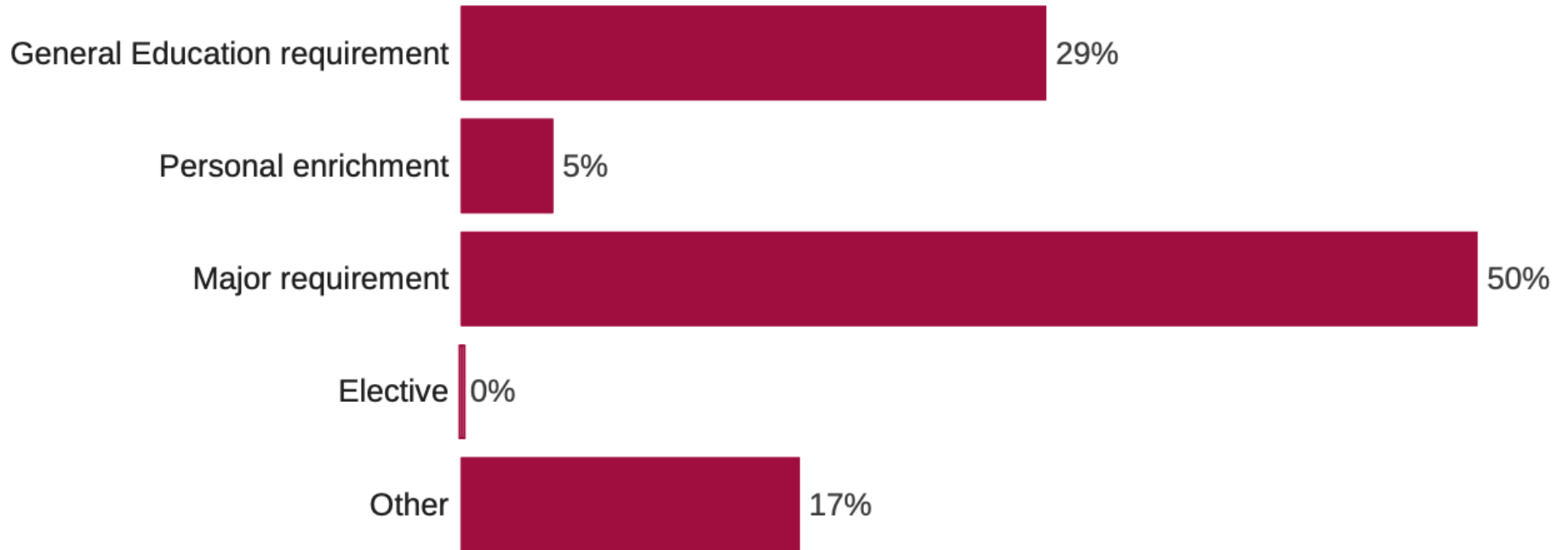
I have felt a sense of community within this program.



● Strongly Agree ● Agree ● Disagree ● Strongly Disagree

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

66 Responses



Other - Text

10 Responses

Other - Text

Pre-requisite for nursing school

Nursing

Nursing program

nursing program

Graduate school prerequisites

nursing

Nursing

Nursing

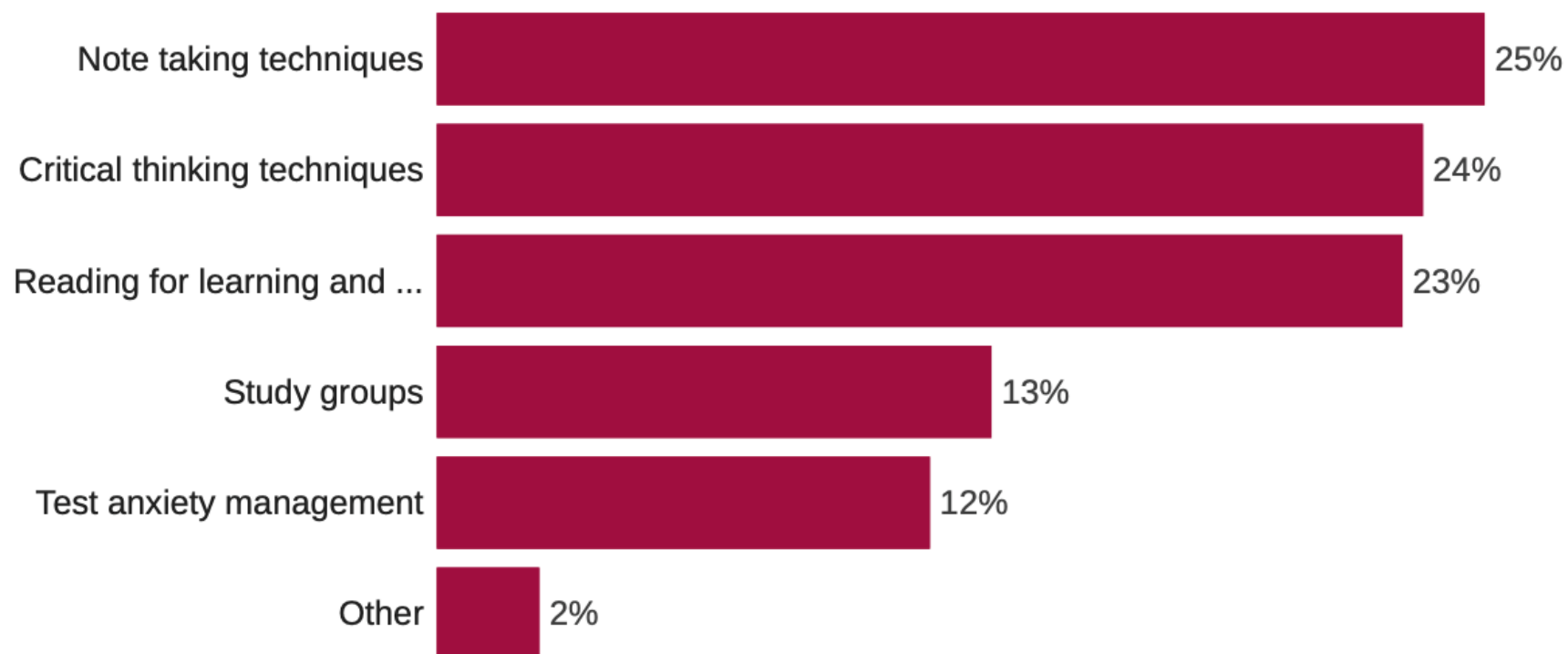
Nursing

nursing

nursing pre req

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.

66 Responses



Other - Text

4 Responses

Other - Text

Memorization

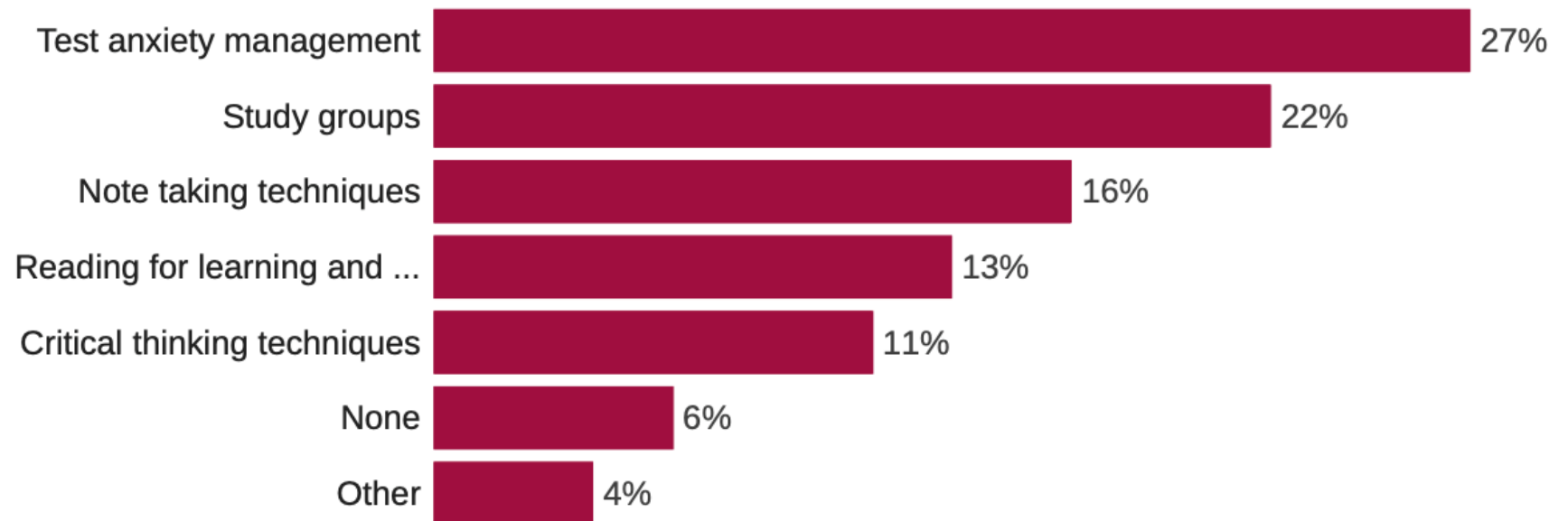
Tutoring

Lab Work

More online resources

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

66 Responses



Other - Text

3 Responses

Other - Text

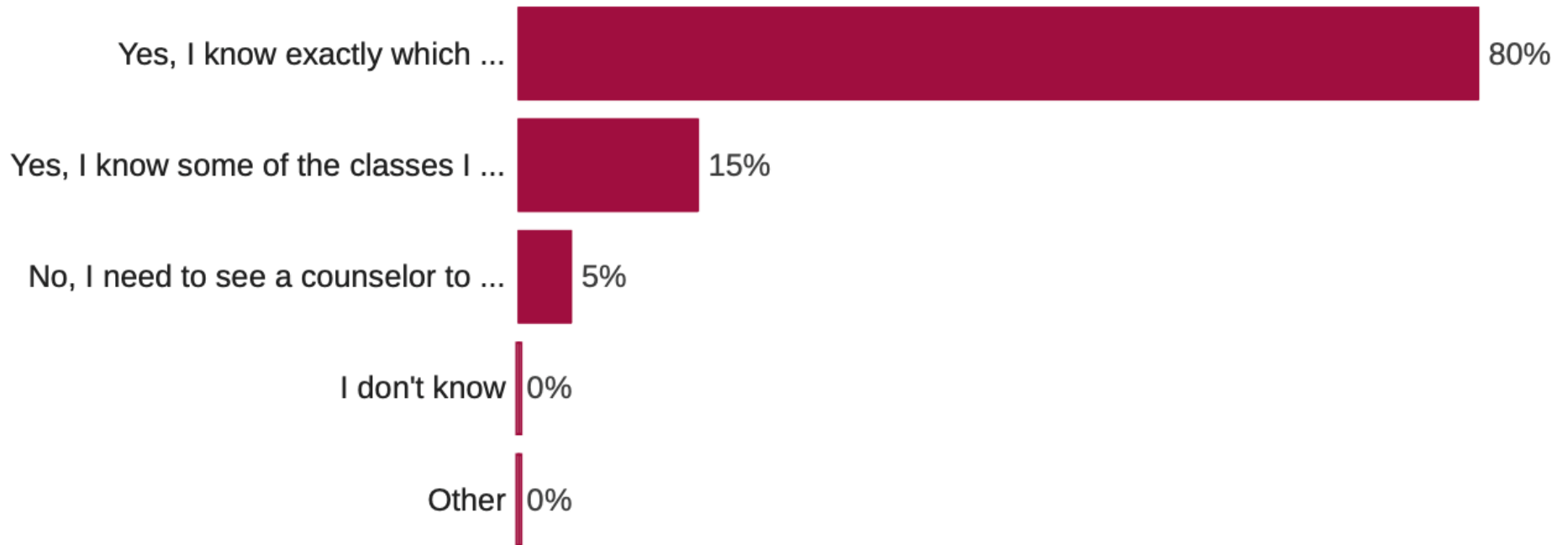
math undestandingbthe problems

Better explanation

More step by step explanation if a problem is not understood

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

66 Responses

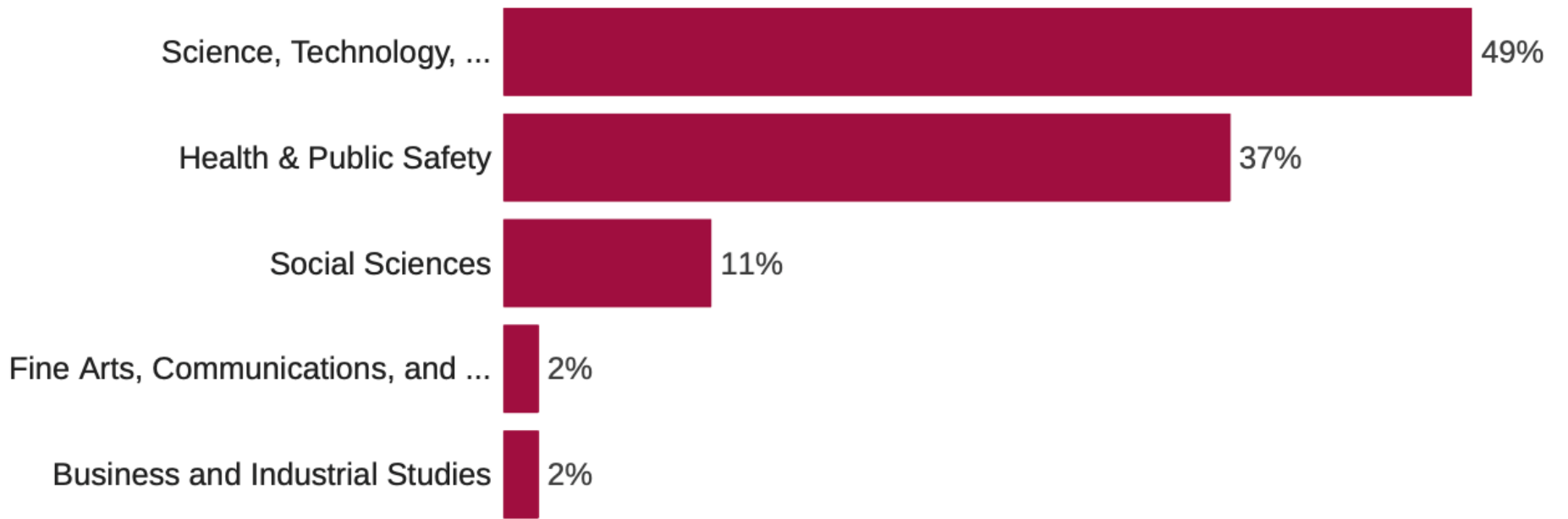


Other - Text

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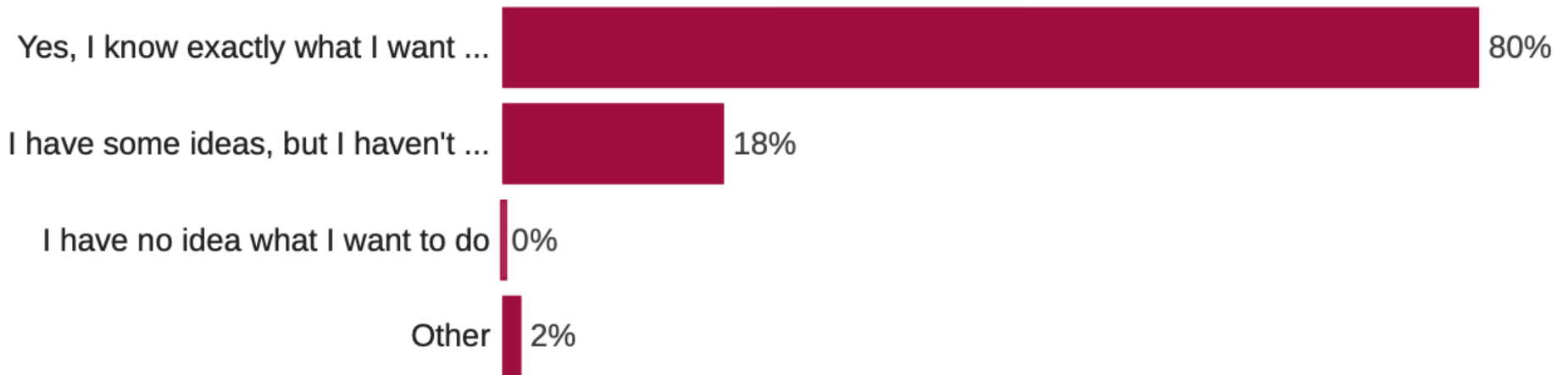
What Guided Pathway Division is the program in?

57 Responses



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

66 Responses



Yes, I know exactly what I want to do - Text

22 Responses

Yes, I know exactly what I want to do - Text

Nursing school

Nursing

Registered nurse

Nursing

Yes my goal is to attend Med school

Physical Therapy

Physical Therapy

Nursing

Nursing

Nursing

Nursing

Biological Anthropology

Physical Therapy

Forensic Anthropologist

Nursing

Nurse

Nursing

Nursing

Health Inspector

RN

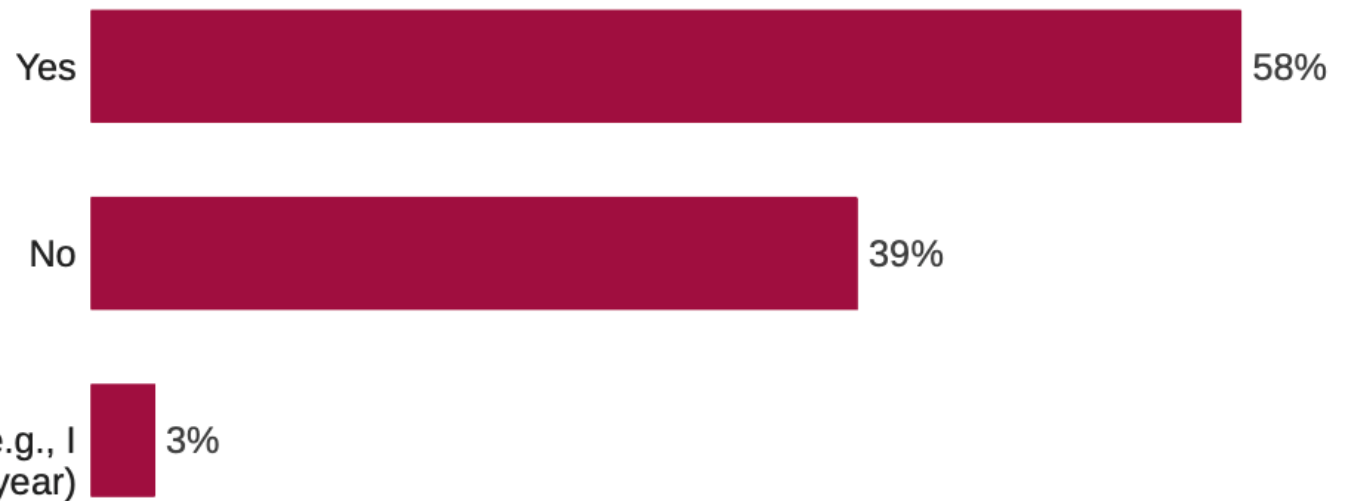
Nursing

Other - Text

No data found - your filters may be too exclusive!

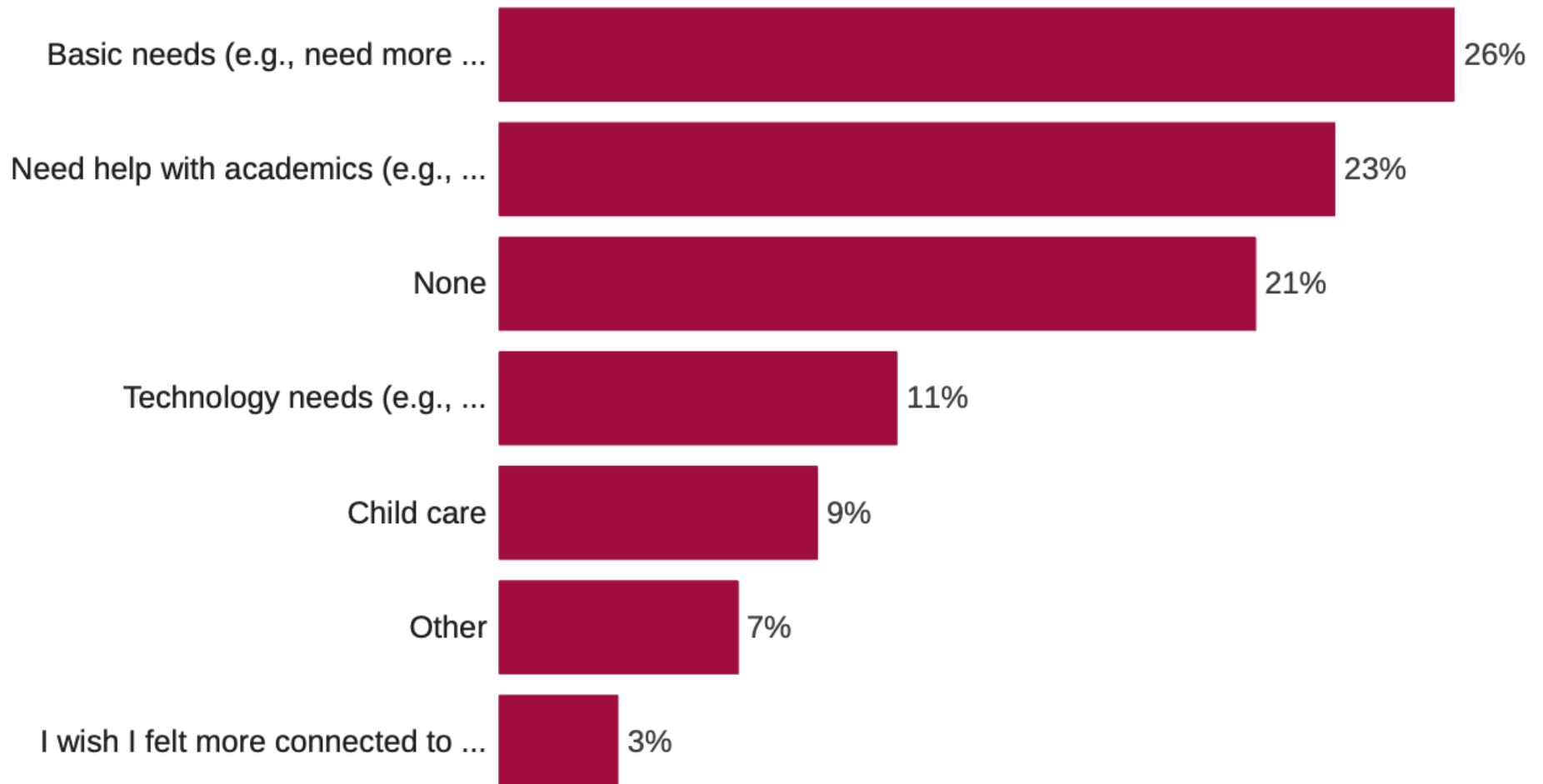
Did you complete the Free Application for Federal Student Aid (FAFSA) or California Dream Act Application for next year?

62 Responses



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

66 Responses



Other - Text

Other - Text

Just Time the lectures are deep and sometimes strenuous

Time: work, school and church balance

Net Tutor availability, due to work and school schedule. I had to adjust my work schedule late in the semester to attend tutoring

Time management

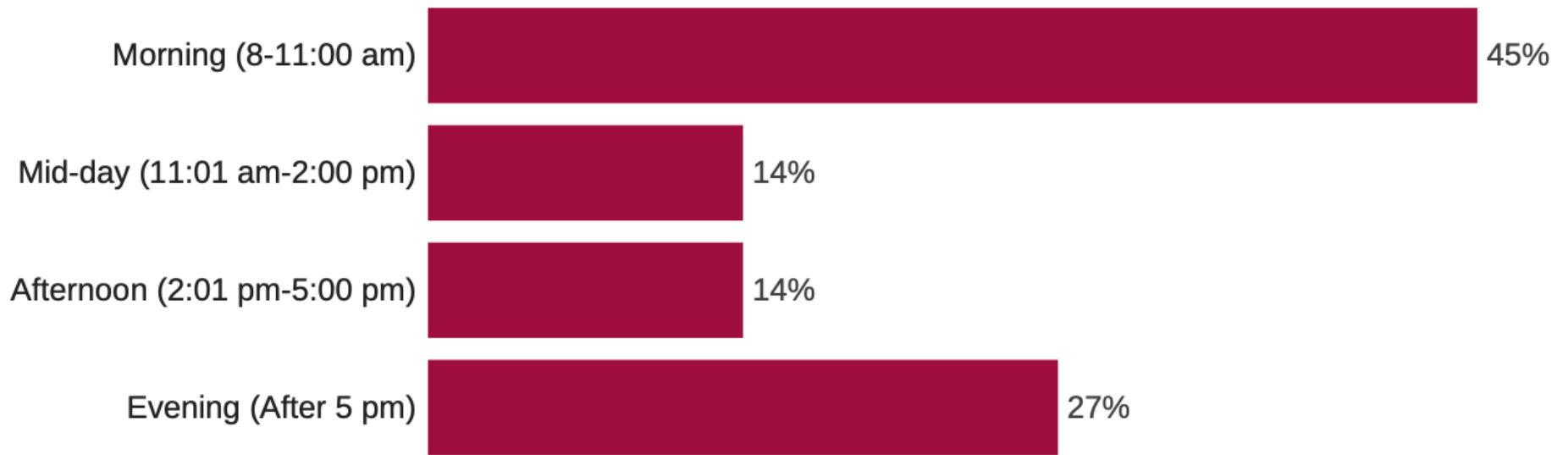
Describe the results of the student survey in the area of curriculum.

The students surveyed prefer to take courses in the morning or evening using the hybrid course teaching method, though the majority of students either strongly agree or agree that the range of chemistry courses offered is appropriate. 80% of the students surveyed had not taken an online course before. The primary reason why students enrolled in an online course was because the in-person courses did not fit their schedules. 23% of the students surveyed enrolled in a chemistry online course because they thought it would be easier than the campus course, however 82% of the students either disagree or strongly disagree with the statement that "Online courses require less work than in-person courses."

Curriculum

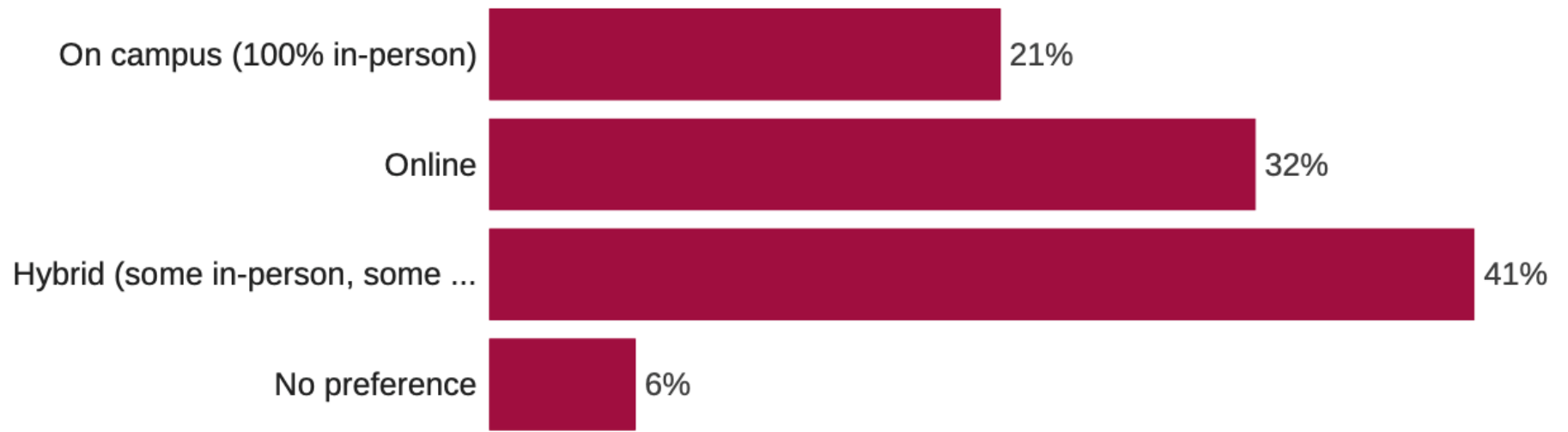
What time of the day do you prefer to take courses at Compton College?

66 Responses



Which teaching method do you prefer?

66 Responses



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

64 Responses



● Strongly Agree ● Agree ● Disagree ● Strongly Disagree

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

66 Responses



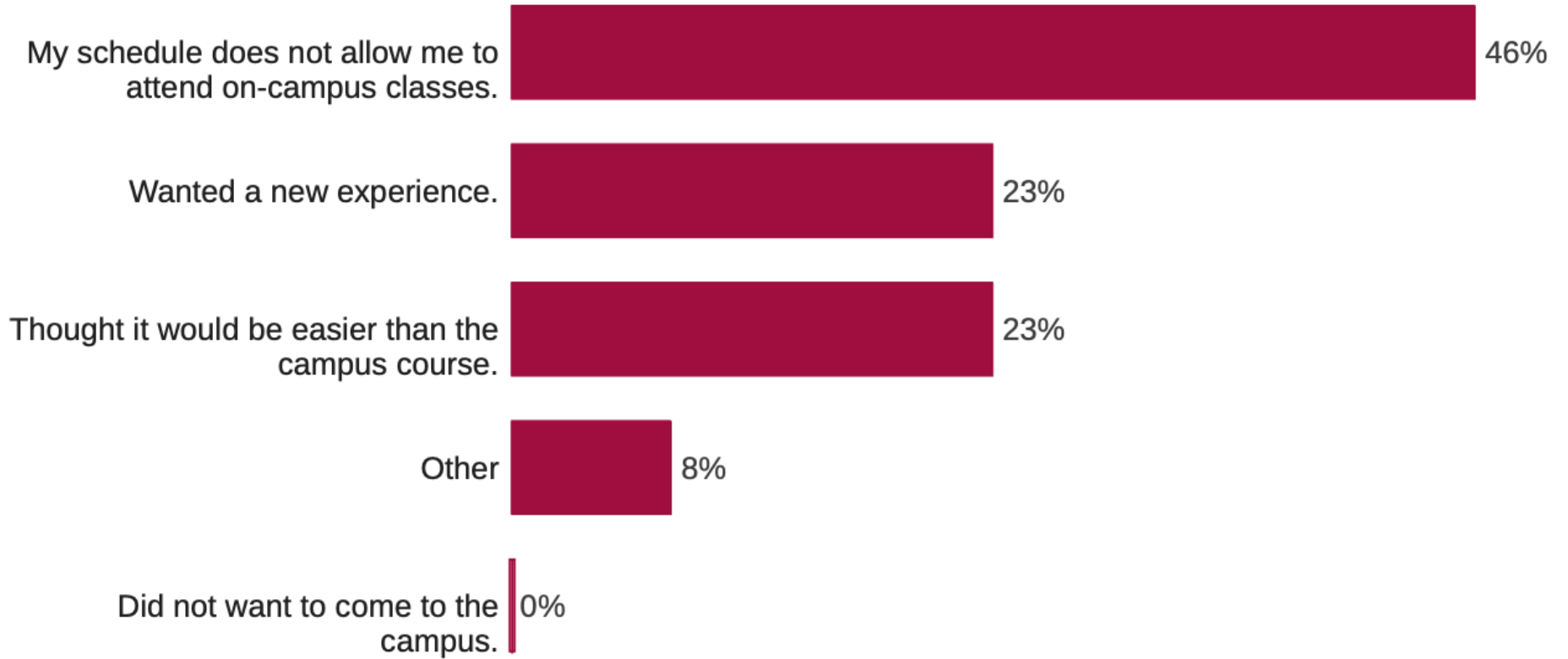
No

80%



Why did you enroll in an online course?

13 Responses



Other - Text

1 Responses

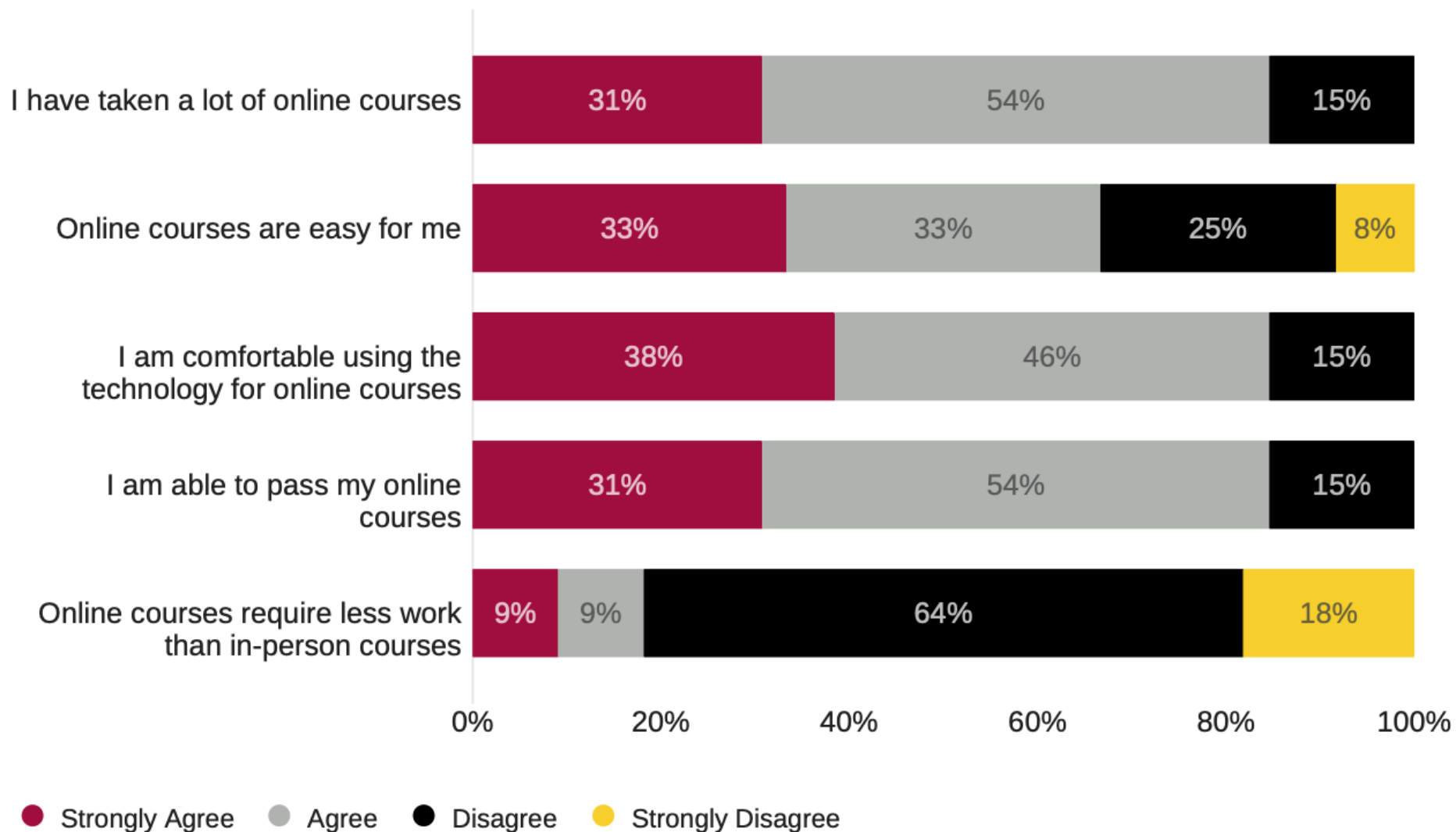
Other - Text

I never knew it was online

I never knew it was online

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

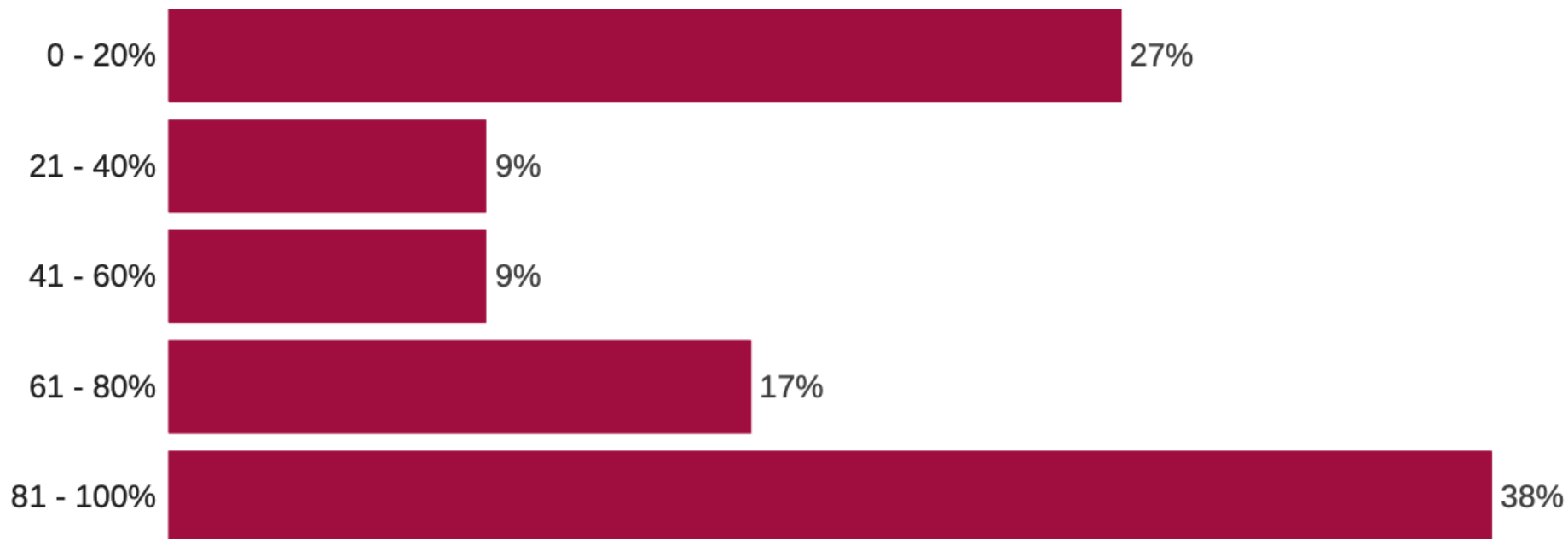
13 Responses



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

What percentage of your courses are online versus in person?

66 Responses



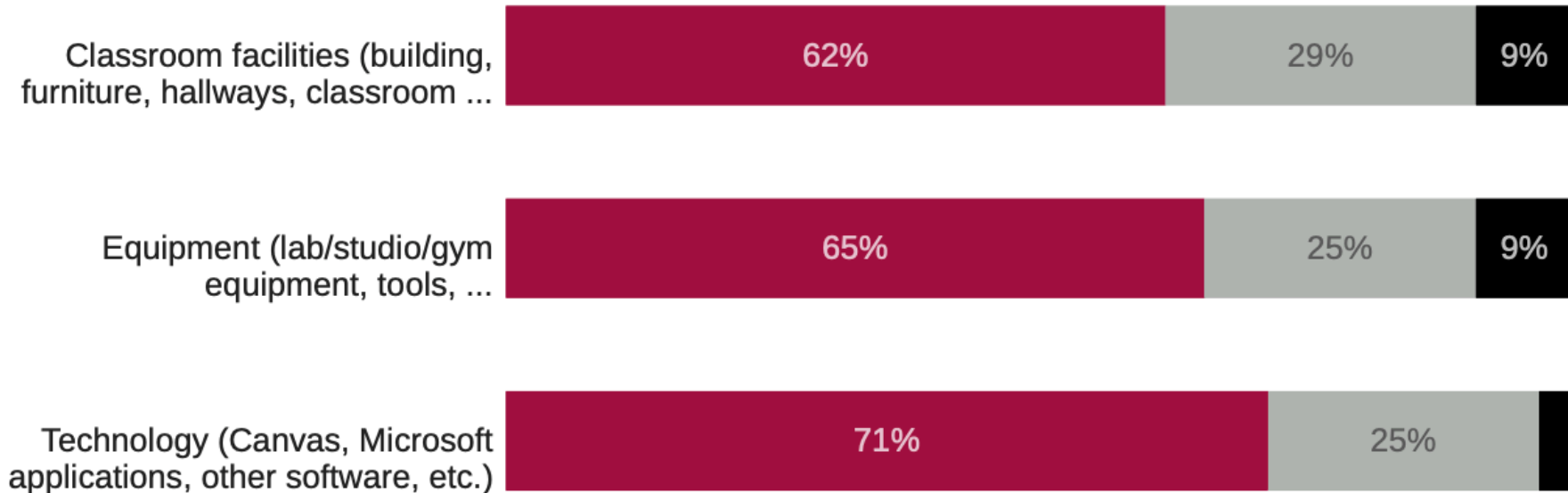
Describe the results of the student survey in the area of facilities, equipment and technology.

Approximately 90% of the students surveyed are satisfied with the classroom facilities, equipment, and technology used in the chemistry courses. One highlight in the written responses include a student feeling that they did not learn less in the online class versus the in-person class. Other students felt that the equipment is kept in good condition and it is reliable. Some areas of improvement include the need for updated supplies, the need for Wi-fi to work properly in the classrooms, and the need for updated communication equipment that would allow the professor to not have to hold their microphone for the duration of their lecture.

Facilities, Equipment, and Technology

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

64 Responses



● Excellent ● Satisfactory ● Poor

***Question 1:** Classroom facilities (building, furniture, hallways, classroom features, etc.)

***Question 2:** Equipment (lab/studio/gym equipment, tools, computers/electronics, etc.)

Elaborate on any or all of the facilities, equipment, or technology you experienced in the program.

15 Responses

Please elaborate

Love the sims labs

Canvas, Honorlock extension.

Great basic technology. Didn't feel like I was learn less than compared to an in-person class

N/A

All of our lab supplies are very sturdy and any that we need and do not have we quickly find

Well kept in good condition

NA

Love to do homework at the computer lab.

I appreciate the zero cost textbook.

I love how my lab was online and the quality of the lab was perfection.

It's bad

The equipment is reliable

I love the professors

WiFi does not work in classroom, supplies are outdated.

Please provide up-to-date communication equipment for the professor - so he is not handicapped constantly using one hand to deliver lectures via Mic/PA system

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

100% of the students surveyed say that they are aware of the course outcomes, including what they should be able to learn and what skills they should possess after completing courses in the chemistry program. 94% of the students think that they are much more knowledgeable about the subject of chemistry than before.

Program Objectives

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

66 Responses



● Strongly Agree ● Agree ● Disagree ● Strongly Disagree

***Question 1:** I am aware of the course outcomes- what I should be able to learn and what skills I should possess after completing courses in the program.

***Question 2:** After taking this program's course, I am much more knowledgeable about the subject than before.

Discuss the implications of the survey results for the program.

The analysis of the data demonstrates that students feel that they are supported academically and their instructors helps them succeed which correlates with the higher success rates of the SLO assessments and overall success and retention.

The analysis of research data and student feedback data correlate on the fact that students prefer to take daytime courses.

Additionally, on the student feedback data the students feel like they learn as much online as would have in person which correlates to the success by modality data from analysis of research data.

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

No other relevant surveys were conducted during the review period.

List any related recommendations

1. Faculty is committed to incorporate more active learning techniques in the class.
2. Faculty is working on revising course material to incorporate more group work during class in order to facilitate/encourage students to form study groups.
3. Develop organic chemistry curriculum. Students continue to ask for these courses and have to go to other colleges to complete it.
4. Update the communications equipment including microphones and Wi-fi connection in the classrooms.

Academic Program Review: (6) Facilities and Equipment First Submission: Version by Nealy, Schetema on 06/04/2024 21:22

Describe and assess the existing program facilities and equipment.

Most of all of the Chemistry lectures and all laboratories are taught in two classrooms. The department also has two rooms that serve as stockrooms; however, one of these rooms is shared and has the photocopier machine. Our room space is limited and will impede the growth of the department.

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.

Our department has a number of immediate facilities and equipment needs that are described below.

1. The faucets in MS 228 and MS 231 need to be fixed. There are some faucets that continuously leak and others that are missing. Normally, we like to pair students for the labs requiring the use of faucets and aspirators. This is not possible due to the limited number of working faucets that we have. These labs force us to group the students into groups of four or more. Having large groups impedes the students' hands-on experiences. We have submitted several work orders for over a year but nothing has been done about it even though the work order has been marked as done. The cost for facilities to fix and repair the faucets would be approximately \$2,000.
2. Hire two new full-time tenure track faculty members. This will help the department to better serve our students and minimize the dependence on adjuncts.
3. Maintain and repair existing laboratory equipment and glassware as needed due to continued use.; \$2500
4. Install lighting under the cabinets by the back of the rooms in MS 228 and MS 231. These areas become extremely dark when part of the lights are turned off and it becomes difficult for the students to see their work.
5. Service the fume hoods or replace them. All of the fume hoods in MS 231 have several locations where they have been corroded. Approximately \$30,000 would be needed to replace the fume hoods in both classrooms.
6. Continue to use Labster for online classes and to supplement in-person laboratory sections of the general chemistry courses. We are unable to estimate the cost due to campus-wide use and this cost is subsidized by the college.

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.

The Chemistry Program has the following long-range needs:

1. Purchase art pieces to upgrade the hallways and display cases near the chemistry classrooms. Students will be commissioned to provide ideas and/or art for a mural. \$5,000.
2. Install overhead exhaust stations in both chemistry laboratories. \$50,000
3. The department needs the following equipment to prepare to offer the organic chemistry series:
 1. Purchase two Gas Chromatography Mass Spectrometers (GC-MS) to use in the instruction of Chemistry 7A/B.; \$20,000
 2. Purchase two FT-IR spectrometers; \$10,000
 3. Purchase at least 15 portable Nuclear Magnetic Resonance (NMR) spectrometers. ; \$20,000
 4. Purchase 20 heating/stir plates; \$2,000
 5. Purchase 35 Organic Chemistry glassware kits; \$13,650

List any related recommendations.

1. Work with facilities to implement a cleaning schedule
2. Purchase and installation of art work near and inside chemistry classrooms
3. Repair and replace the non-functional and/or missing faucets in MS 228 and 231.
4. Install lighting under the cabinets.
5. Offer Organic Chemistry series

Academic Program Review: (7) Technology and Software First Submission: Version by Nealy, Schetema on 06/04/2024 21:22

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

Typically the Chemistry faculty use a laptop (or desktop) computer, a document camera, and projectors. Some of the instructors incorporate Canvas or websites for the students to access the class material. The only program that the department uses right now is Chem Draw. We need to buy a license so each faculty member has access to this program. Once we begin offering Organic Chemistry we will need to purchase a license to install Chem Draw to the computers in the computer lab for the students to use and purchase licenses for Spartan, a modeling software.

Another software used regularly in the chemistry department is Labster. The Labster platform is utilized by multiple departments on campus. It is useful as a learning aid and as an opportunity to provide virtual laboratory practice for students learning virtually.

The full-time chemistry faculty have adopted OER textbooks and other OER materials as their primary course materials for all of the classes that they teach. In addition, the part-time chemistry faculty members are encouraged to use OER textbooks and course materials. Therefore, the use of a computer as well as Wi-Fi is critical for the faculty as well as the students.

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.

The department would benefit from the purchase of Chem Draw to better aid students in visualizing molecules and running simple calculations on the energetics of atoms and molecules. This software costs \$70 per year per user. The College can purchase an academic license and install the software on all the computers in the computer lab for student use. Faculty would have the software directly downloaded to their school-issued laptops. Not having Chem Draw would deny students the opportunity to model chemical and biological molecules to study. Installed Wi-Fi routers in each of the chemistry classrooms. Students will have reliable internet access to complete on-line assignments and access the OER course materials.

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.

Long-range needs of the department would include updated projectors and document readers for both classrooms. The existing technology is sufficient to last for 2+ more years, but updated technology would benefit students, staff, and the department. Cost estimate per projector is \$1500, and there are two classrooms that require these updated projectors. Document readers cost \$1000 per unit and two units would be required. Not having updated technology in the classrooms would result in outdated technology.

List any related recommendations.

1. Purchase ChemDraw site license for faculty (Mac and PC versions needed) \$5,000
2. Purchase license for Spartan '24 software, \$6,000
3. Purchase two overhead projectors and two document readers \$5,000
4. Faculty professional development for OER adoption

Academic Program Review: (8) Staffing First Submission: Version by Nealy, Schetema on 06/04/2024 21:22

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

Currently, the Chemistry department has two tenure-track faculty members. There are a total of five adjunct faculty. The department offers four courses with 9 sections of which 44% are taught by full-time faculty.

There is one physical science technician responsible for assisting all physical science faculty, including the Chemistry, Physics, Astronomy, and Earth Science departments.

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.

With the departure of one of the three full-time faculty members, the department is in dire need to replace this vacancy. The students obtain a better learning experience when the faculty is available to assist them during office hours and could have better continuity if they take the full general chemistry series with the same full-time faculty member. With a third full-time faculty member the department will be able to better plan and prepare to offer the Organic Chemistry series.

With the increase in the courses being offered and the demand for the preparation of the materials and demonstrations, the workload of the lab technician has increased. Additionally, the department wants and plans to offer Organic Chemistry. In anticipation and preparation for this goal, another full-time lab technician that specializes in Organic Chemistry will be needed, or at least a part-time lab technician. Alternatively, and prior to offering Organic Chemistry, we can hire a student worker.

List any related recommendations.

A full-time faculty is needed to replace the full-time, tenured faculty member that left.

A full-time or part-time lab technician specializing in Organic Chemistry will be needed to plan to offer Organic Chemistry.

Academic Program Review: (9) Direction and Vision First Submission: Version by Nealy, Schetema on 06/04/2024 21:23

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

There is a high demand for chemistry, not only on our campus, but nationwide. We would like to expand our program and offer more STEM courses at CC.

One way in which we would like to expand is by offering organic chemistry courses. Students continue to ask whether CC offers organic chemistry. They need to go to other local colleges to fulfill this part of their requirements when they learn that CC does not offer it.

Unfortunately, the lack of classroom and lab space hinders our growth. One possibility to overcome this difficulty is to develop hybrid courses, in which the lecture is taught online and the lab and a discussion hour would be performed on campus. There are some colleges, such as Los Angeles Valley College, that offer hybrid courses (Chem 104 and Chem 150) and have been successful for several years.

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

The direction and vision of the Chemistry Department at Compton College is to provide students with a chemistry foundation that they need for their program of study and provide them with the best education possible. To achieve these goals, our department will continue to improve the current teaching methodologies, develop innovative methods to better equip our students with the knowledge and technology they may need to succeed, improve/modify the curriculum, and strive to offer more STEM major courses. We would like the entire Chemistry faculty to incorporate more cooperative learning methods and innovative technology to teach our students not only the knowledge of chemistry, but skills which will help them become better students and citizens.

List any related recommendations.

1. Develop Organic Chemistry curriculum and lab
2. Develop hybrid chemistry courses for Chem 102, Chem 104, and Chem 150
3. Faculty should complete professional development opportunities focused on curriculum development, technology incorporation and/or best practices to improve pedagogy.

Academic Program Review: (10) Prioritized Recommendations First Submission: Version by Nealy, Schetema on 06/04/2024

21:23

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.

Our priority in the Chemistry Program is to improve the retention and success rates of our students. We believe we begin to accomplish these objectives by first ensuring that the faculty have the required and necessary resources to provide quality instruction. First and foremost, the faculty and staff need to be able to create the required materials to provide to our students by having the necessary software. Then, the facilities need to be adequate to foster a welcoming educational environment by performing all facility repairs. This includes working with facilities and maintenance to sweep and mop the classrooms more frequently, restocking the paper towels, adding more trashcans. The laboratory technician also needs to dust and clean the classrooms, tables, and cabinets once a week. We believe that by offering embedded coaches in most, if not all, courses and sections, the retention and equity gap can be addressed. The faculty has also observed and received feedback from students that having on-line courses, including hybrid and asynchronous, would help them succeed in their academic goals, as many do not have the time or opportunity to come to campus due to personal obligation such as work or the need to care for family members. Lastly, we plan to expand our program to meet the demand of more STEM majors by offering Organic Chemistry; which would put us on a path to offer a Chemistry degree.

Recommendations	Cost Estimate	Strategic Initiatives
1. Purchase license for Chem Draw Software for all faculty	5,000	1, 2 & 3
2. Repair the faulty faucets in MS 228 and 231	2,000	1
3. Work with facilities to have rooms cleaned more regularly.		1
4. Have laboratory technician clean classrooms		1
5. Install lighting under cabinets	2,000	1
6. Increase the number of sections with embedded coaches	3,000	1, 2 & 3
7. Purchases Wi-fi routers	400	1, 2, & 3
8. Purchase overhead projectors and document cameras	5,000	1, 2, & 3
9. Purchase art work for classroom and approximate hallways	5,000	1 & 2
10. Offer a hybrid course for Chemistry 102		1, 2, & 3
11. Revise course material		1, 2, & 3
12. Create a Sharepoint repository for shared course material		1, 2, & 3
13. Professional development for faculty		1, 2, & 3
14. Annual faculty meeting to improve SLOs and PLOs		1, 2 & 3
15. Purchase necessary equipment for Organic Chemistry	120,000	1, 2, & 3
16. Offer organic Chemistry		1, 2, & 3