

DATE: May 27, 2020
TO: Karen Erickson, Lisa Schultheis & Gillian Schultz, Faculty | Ram Subramanian, PSME Dean
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FROM: Lisa Ly, Research Analyst
RE: CHEM 1A/1AH to BIOL 1A, 2014-15 to 2018-19

Overview

Biology faculty have noticed a decrease in their BIOL 1A enrollments starting in 2017-18. In an effort to reverse the trend, they want to assess the enrollment behaviors of students prior to enrolling in BIOL 1A. The following questions were provided to Institutional Research and Planning:

1. [As CHEM 1A/1AH is the prerequisite, how many CHEM 1A/1AH students enroll in BIOL 1A?](#)
2. [How long does it take for CHEM 1A/1AH students to enroll in BIOL 1A?](#)
3. [For potential marketing, what other courses do students take prior to enrolling in BIOL 1A?](#)

Methodology

For questions 1 and 2, CHEM 1A/1AH students were assigned to the academic year in which they first enrolled in the course. Students whose first CHEM 1A/1AH attempt occurred between 2014-15 and 2018-19 were selected and tracked to CHEM 1A/1AH completion and first BIOL 1A enrollment. Data was tracked through the most recent end of term (winter 2020); and therefore, students who started CHEM 1A/1AH in 2014-15 will have more time to enroll in BIOL 1A than students who started in 2018-19. Any student who enrolled in BIOL 1A *before* they completed CHEM 1A or enrolled in BIOL 1A even though they *did not complete* CHEM 1A (no A, B, C, or P grades on file) were excluded. For this report, 62 students over the five year period were omitted. For question 3, BIOL 1A students were assigned to the academic year in which they first enrolled in the course. Students whose first BIOL 1A enrollment occurred between 2014-15 and 2019-20 were selected and their enrollments in the term immediately preceding their first BIOL 1A enrollment were examined. In this report, wherever CHEM 1A is mentioned, it is inclusive of CHEM 1AH.

Summary

- Each year, there are 451 first-time CHEM 1A enrollees and 27% (N=122) continue onto BIOL 1A.
- More than half of them (61% or N=75) enrolled in their first BIOL 1A within two terms after enrolling in their first CHEM 1A course.
- Asians, females, and those who are not low income nor first-generation college students are more likely to continue onto BIOL 1A than their counterparts.
- The 10 courses students enrolled in more frequently prior to their first BIOL 1A enrollment are listed below. More recently, first-time BIOL 1A enrollees in 2019-20 are also enrolling in ENGL 1A and MATH 10.
 - NCBS 405 and NCLA 406B (tutoring)
 - CHEM 1A/1B/1C
 - ENGL 1B
 - MATH 1A/1B and MATH 48B/48C

Q1: How many CHEM 1A students enroll in BIOL 1A?

- There are about 451 students who enrolled in CHEM 1A for the first time each year between 2014-15 and 2018-19.
- The majority of them (78%) eventually completed CHEM 1A with grades A, B, C or P.
- Among the 350 completers, 299 (85%) completed CHEM 1A on their first attempt. The remaining students completed in 2 terms (7%), 3 terms (3%) and 4 or more terms (4%).

Table 1: Time to CHEM 1A/1AH Completion

Academic Year Started CHEM 1A/1AH	First CHEM 1A/1AH Enrollment >> CHEM 1A/1AH Completion											
	1 term		2 terms		3 terms		4 terms		5+ terms		Total	
	HC	Percent	HC	Percent	HC	Percent	HC	Percent	HC	Percent	HC	Percent
2014-15	328	88%	20	5%	8	2%	6	2%	11	3%	373	100%
2015-16	325	81%	36	9%	18	4%	9	2%	14	3%	402	100%
2016-17	299	84%	33	9%	15	4%	4	1%	7	2%	358	100%
2017-18	296	88%	20	6%	11	3%	4	1%	6	2%	337	100%
2018-19	245	88%	17	6%	8	3%	6	2%	3	1%	279	100%
Total	1,493	85%	126	7%	60	3%	29	2%	41	2%	1,749	100%
5-Year Average	299	85%	25	7%	12	3%	6	2%	8	2%	350	100%

- There are about 122 CHEM 1A completers who eventually enrolled in BIOL 1A. While not all 122 students enrolled in BIOL 1A in the same academic year as their first CHEM 1A enrollment, as the data in the next section will reveal, most CHEM 1A completers enrolled in BIOL 1A sooner rather than later.

Table 2: CHEM 1A/1AH Completers Who Continued to BIOL 1A



Academic Year Started CHEM 1A/1AH	CHEM 1A/1AH			BIOL 1A	
	Starting	Completed		Enrolled	
	HC	HC	Rate	HC	Rate
2014-15	478	373	78%	122	26%
2015-16	512	402	79%	141	28%
2016-17	460	358	78%	128	28%
2017-18	415	337	81%	130	31%
2018-19	390	279	72%	90	23%
Total	2,255	1,749	78%	611	27%
5-Year Average	451	350	78%	122	27%

Q2: How long does it take for CHEM 1A students to enroll in BIOL 1A?

- Overall, 61% CHEM 1A completers (N=75) enrolled in their first BIOL 1A course within two terms after enrolling in their first CHEM 1A course.
- When the number of CHEM 1A attempts is taken into account, among those who completed CHEM 1A on their first attempt, they are likely to enroll in BIOL 1A one term later (43%). Those who took two attempts to complete CHEM 1A are likely to take two to three terms before they enrolled in BIOL 1A, whereas those who took three attempts to complete CHEM 1A are likely to take five or more terms (63%).

Table 3: Time to First BIOL 1A Enrollment, 2014-15 to 2018-19 (5-Year Average)

Time to First BIOL 1A Enrollment	CHEM 1A/1AH Completers - Number of Attempts							
	1x		2x		3x		Total	
	HC	Percent	HC	Percent	HC	Percent	HC	Percent
Enrolled in the same term as first CHEM 1A term	6	5%	0	0%	0	0%	6	5%
Enrolled 1 term after first CHEM 1A term	45	43%	0	0%	0	0%	45	36%
Enrolled 2 terms after first CHEM 1A term	20	19%	4	29%	0	0%	24	20%
Enrolled 3 terms after first CHEM 1A term	15	14%	4	27%	0	11%	19	16%
Enrolled 4 terms after first CHEM 1A term	10	10%	4	26%	1	26%	15	12%
Enrolled 5 or more terms after first CHEM 1A term	8	8%	3	18%	2	63%	13	11%
Total	103	100%	15	100%	4	100%	122	100%

Students Likely to Enroll In BIOL 1A

Table 4 provides the demographics of CHEM 1A and which student groups are more likely to complete CHEM 1A as well as more likely to enroll in BIOL 1A.

- CHEM 1A enrollees comprise of Asians (41%), Whites (25%), males (53%) and those who self-reported they are not low income¹ (78%) nor first-generation college² (82%) students. These student groups are more likely to complete CHEM 1A as well. **Student groups who are more likely than their counterparts to continue to BIOL 1A are Asian, female, not low income and not first-generation college students.**

Table 4: CHEM 1A to BIOL 1A Enrollees by Demographics, 2014-15 to 2018-19 (5-Year Average)

	Started CHEM 1A/1AH		Completed CHEM 1A/1AH		Enrolled in BIOL 1A	
	HC	Percent	HC	Rate	HC	Rate
African American	10	2%	6	58%	3	31%
Asian	185	41%	152	82%	56	30%
Filipinx	22	5%	14	63%	5	22%
Latinx	73	16%	47	63%	18	24%
Native American	2	0%	1	40%	0	20%
Pacific Islander	4	1%	3	68%	1	32%
White	115	25%	91	79%	29	25%
Decline to State	40	9%	37	93%	10	26%
Female	210	46%	159	76%	73	35%
Male	239	53%	189	79%	49	21%
Unknown	2	1%	2	67%	0	8%
Low Income	100	22%	67	66%	24	24%
Not Low Income	351	78%	283	81%	99	28%
First-Gen. College	73	16%	48	66%	17	24%
Not First-Gen. College	368	82%	295	80%	102	28%
Unknown	10	2%	7	72%	3	28%
Total	451	100%	350	78%	122	27%

- **The student groups who are less likely to enroll in BIOL 1A are denoted in red font in Table 4.**
 - While males are more likely than their female counterpart to complete CHEM 1A (79% versus 76%), when tracked to BIOL 1A enrollment, females are more likely to enroll

¹ Low-income students are those whose household income is less than \$25,000.

² First-generation college students are those who indicated their parent/guardian's highest educational attainment is high school or less.

(35%) than males (21%). To increase their BIOL 1A enrollment rate to 27%, 16 additional males would need to enroll.

- Similarly, an additional two to four students from each subgroup—Filipinx, Latinx, Native American, White, low income and first-generation college—would need to enroll in BIOL 1A in order for each group to achieve a 27% enrollment rate.

Q3: What other courses do students take prior to enrolling in BIOL 1A?

- Before enrolling in their first BIOL 1A course, the top 10 courses students enrolled in one term prior to BIOL 1A include the following:
 1. NCBS 405.
 2. CHEM 1A
 3. CHEM 1B
 4. ENGL 1B
 5. MATH 1A
 6. MATH 1B
 7. CHEM 1C
 8. NCLA 406B
 9. MATH 48C
 10. MATH 48B
- More recently in 2019-20, BIOL 1A students are also enrolling in ENGL 1A and MATH 10.