



## EXPLORING DFW RATES WITHIN THE COLLEGE OF SCIENCE AND MATHEMATICS: BCHE 5180 -BIOCHEMISTRY I (FALL 2019 - SPRING 2021)

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### PURPOSE

Students planning to apply to medical school after graduation take the BCHE 5180 (Biochemistry I) course as a requirement or recommended course for admission to most medical schools. Given its pivotal role in medical school placement, we decided to explore how successful students are in passing the BCHE 5180 course with an emphasis on group differences between students passing and students failing to pass the course. Explored group comparisons include demographic, general student experience, and placement variables. The current report summarizes the observed between-group differences and seeks to guide a discussion on improvement of student experience and placement.

### "DFW" RATES

1,459 students took the BCHE 5180 course between Fall 2017 and Fall 2020. 114 or 7.81% of those students received a grade of D, F, W, or equivalent (i.e., XF, WF, FA, SP, SS, UU) in the course. Thirty-nine students took the course more than once, some of which received a grade of D, F, W, or equivalent multiple times. The table shows the DFW rates in BCHE 5180 broken down by academic term.

Furthermore, breakdown by DFW grades received is as follows:

- D: 39
- F: 13
- W: 57
- Equivalent: 14

Term	Total N (students)	N (DFW) / % of Total
Fall 2017	229	19 / 8.30%
Spring 2018	112	10 / 8.93%
Summer 2018	49	4 / 8.16%
Fall 2018	301	22 / 7.31%
Spring 2019	167	9 / 5.39%
Summer 2019	43	5 / 11.63%
Fall 2019	242	15 / 6.20%
Spring 2020	94	3 / 3.19%
Summer 2020	N/A	N/A
Fall 2020	263	28 / 10.65%

### STUDENT EXPERIENCE AND PLACEMENT DATA

To examine DFW rates in relation to student experience and placement, we had to limit our sample to students that graduated between Fall 2019 and Spring 2021, which resulted in the final sample size of 752 students. Within that sample, 45 students were identified as having received a grade of D, F, W, and/or equivalent. (i.e., FA, WF, SP, XF) in BCHE 5180.

The sample was then divided into 2 groups:

- 1) DFW group: 45 students that have received D, F, W, and/or equivalent in the course
- 2) No DFW group: 707 students that have NOT received D, F, W, nor equivalent grade in the course (i.e., students that received grades A, B, or C)



We first compared the two groups on gender, race, average ACT score, average conscientiousness score, and majors.

	% Male	% White	Avg. ACT	Avg. Conscientiousness Score
DFW (N=45)	55.56%	66.67%	27.73 (N=40)	36.03 (N=35)
No DFW (N=707)	42.53%	82.50%	29.49 (N=678)	37.45 (N=623)

Even though statistical significance could not be explored due to large sample size differences between groups, DFW group seems to be more male and less white compared to No DFW group. DFW students on average also have lower ACT scores as well as lower conscientiousness score (although a difference of 1.42 points is not meaningful given that the scale ranges from 9 to 45). Additionally, the most frequent majors show a similar distribution in both groups.

Major	BMSC	CHEN	MBMS	MCMB	BCHM	LBSC	IBIO	MCCM	CHMA	Other
DFW (N=45)	9	8	1	1	1	6	2	3	2	12
No DFW (N=707)	228	159	77	25	24	19	22	16	14	119

We then compared the two groups based on whether they switched their major one or more times as well as their average length to graduation (in years; 1 year=3 semesters). *Note: switching from pre-engineering to engineering major does not count as a major transfer.*

Although conclusions on causality or temporal precedence between major transfers and receiving DFWs in BCHE 7200 cannot be drawn, students from the DFW group were more likely to have changed their major one or more times during college. They also on average took longer to graduate compared to their No DFW counterparts (**4.95 years** vs. **3.64 years**).

Finally, the two groups were compared on at-graduation placement rates. The DFW group had lower employment, education, and overall success rates at graduation.

	% One or More Major Transfers	Average Length to Graduation (in Years)
DFW (N=45)	44.44%	4.95 (N=34)
No DFW (N=707)	27.44%	3.94 (N=644)

	Employment Success Rate	Education Success Rate	Overall Success Rate
DFW (N=45)	44% (11/25)	35.71% (5/14)	41.03% (16/39)
No DFW (N=707)	51.06% (144/282)	62.09% (244/393)	57.48% (388/675)

## DISCUSSION QUESTIONS

- How do DFW rates in BCHE 5180 compare to other advanced courses in COSAM?
- What data could be used or collected to track if students' major transfers are a direct result of their grade in BCHE 5180?
- Do student grades in BCHE 5180 somehow lead to increased length to graduation?
- Do student grades in BCHE 5180 lead to changes in student post-graduation plans?