

## Chemistry Program Assessment Report 2018-2019

### Learning Outcome #1: Apply Foundational Knowledge

Assessment Measures / Methods	Target Levels / Benchmarks	Results	Action Taken																																	
Assessment 1 (direct) Chemistry Results Assessment Program exam (CRAP) Diagnostic of Undergraduate Chemical Knowledge (DUCK)	80% of students get 50% or better as their highest CRAP grade	Targets not met: General Chem: 88.9% Organic: 66.7% Analytic: 66.7% P-Chem: 55.6% Inorganic: 55.6% n = 9	Get rid of CRAP Exam and just give two DUCK exams. Separate the DUCK content out the same way as the CRAP exam, find/make study sheets so students can do better, do not count biochemistry DUCK questions for students who do not take biochemistry. Make DUCK count more in the senior seminar class.																																	
Assessment 2 (indirect) Final course grades for Chem 113, 114, 241, 242, 243, 244, 357, 358, 471	80% of chemistry students score a "B-" or higher in each course.	Not met. Only three out of the nine chemistry lecture courses met the benchmark <table style="margin-left: 20px;"> <thead> <tr> <th>class</th> <th>%</th> <th>n</th> </tr> </thead> <tbody> <tr> <td>113</td> <td>100.0%</td> <td>5</td> </tr> <tr> <td>114</td> <td>80.0%</td> <td>5</td> </tr> <tr> <td>241</td> <td>50.0%</td> <td>4</td> </tr> <tr> <td>242</td> <td>100.0%</td> <td>2</td> </tr> <tr> <td>243</td> <td>16.7%</td> <td>6</td> </tr> <tr> <td>244</td> <td>50.0%</td> <td>6</td> </tr> <tr> <td>357</td> <td>66.7%</td> <td>9</td> </tr> <tr> <td>358</td> <td>44.4%</td> <td>9</td> </tr> <tr> <td>471</td> <td>44.4%</td> <td>9</td> </tr> <tr> <td>overall</td> <td>56.4%</td> <td>55</td> </tr> </tbody> </table>	class	%	n	113	100.0%	5	114	80.0%	5	241	50.0%	4	242	100.0%	2	243	16.7%	6	244	50.0%	6	357	66.7%	9	358	44.4%	9	471	44.4%	9	overall	56.4%	55	Count students who are chemistry majors that semester and those that became chemistry major. Include the number of students along with the percentage. See if positive results in freshman class follow them through their King's matriculation and can be repeated in new freshman class.
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113	100.0%	5																																		
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#### Last year follow-up:

Changed benchmark for Assessment 1. Students took the DUCK exam twice and the CRAP exam twice. Students averaged about the 33<sup>rd</sup> percentile on DUCK when scores normalized to national average.

Freshmen students who were involved with research had their research advisor assigned as their Alternate Chemistry Department Contact (ACDC); the rest of freshmen had an ACDC assigned who the student did not have for lecture nor lab. Did not compare the results to overall student GPA.

#### Discussion:

Students are not motivated to do well on either the DUCK or CRAP exam. The DUCK is a national exam and asks more critical thinking questions whereas the CRAP is more content driven and written in-house. We will find a way to make them take the DUCK more seriously to better compare their abilities to other schools and not subject them to the CRAP.

## Chemistry Program Assessment Report 2018-2019

### Learning Outcome #2: Interpret & communicate chemical information effectively

Assessment Measures / Methods	Target Levels / Benchmarks	Results	Action Taken
Assessment 1 (direct)  Oral presentations on actual and/or literature research projects	80% of chemistry students score 80% or higher on the evaluation rubric.	Target not met  30% (three of ten students) made $\geq 80\%$  90% of students made $\geq 70\%$	Lower score to 70%
Assessment 2 (direct)  Poster presentations on actual and/or literature research projects	80% of chemistry students score 80% or higher on the evaluation rubric.	Target not met  50% (five of ten students) made $\geq 80\%$  80% made $\geq 70\%$	Lower score to 70%

#### Last year follow-up:

Did not change presentation percentage of fall senior seminar course grade; lowering the benchmark looks like the better option.

Posters and main papers were made available to faculty electronically before the poster session.

#### Discussion:

The rubric is based on a 1-5 scale (1=unacceptable; 2=below basic; 3=basic; 4=proficient; 5=advanced) so a score of 80% (4 out of five) means 80% of the students are AT LEAST proficient. This seems like too high of a standard based on the rubric definitions. Also, since the quality of the posters and talks in 2018-2019 were deemed acceptable on average by the faculty, it looks as if 70% (3.5 out of 5) seems like a benchmark well calibrated to the relation between faculty expectations and faculty rubric results.