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## CNAHS\_2018-2019\_Deans\_Report

### **Abstract**

CNAHS 2018-2019 Deans Report

### **Keywords**

CNAHS, 2018-2019, Deans Report

# 2018-2019 College-level Annual Assessment Results and Recommendations Report

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This report serves to provide a summary of results and recommendations for the College-at-large.

**Data from each individual program is to be addressed:**

College: CNAHS - College of Natural, Applied and Health Sciences

Dean: Dr. George Chang & Associate Dean: Dr. Brian Teasdale

## Section 1: Summary of the State of the College

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### A. Enrollment and Graduation Rate Analysis

Analyze and discuss the current year's program data as compared to the previous five years of collected data for each program with respect to:

#### Program Enrollment

The College of Natural, Applied, and Health Sciences (CNAHS) is currently comprised of five "Schools" that offer 11 undergraduate programs and graduate degree programs. The five-year enrollment trend data for the last 5 years is given below in Table 1 for each program (5-year highs occurred in 2018-2019 for Math Science, Computer Science, and the Biology programs). A short summary of each program's 5-year enrollment trend and 4/6-year graduation rate will be summarized. As shown in the tables, the School of Computer Sciences and the School of Natural Sciences have shown strong growth in most of their degree programs except for Chemistry. The School of Environmental and Sustainability Sciences and the School of Mathematical Sciences has stable although low enrollment, whereas the School of Nursing has shown weakness in enrollment due to many factors. As of July 1st, 2019 the School of Nursing has been moved under the Nathan Weiss Graduate College for administrative oversight. This move will consolidate most of the "Health" programs together allowing better management of resources and program assessment.

SESS and the Chemistry program have both taken steps to increase enrollment by working with admissions in identifying feeder schools and meeting with them directly, as well as developing additional recruitment materials. CNAHS has active graduate programs in Computer Information Systems.

Overall, the college has seen a growth of 263 undergraduate students over the last 5 years. The Biology Program is the largest program in the college and has again reached a five year high 1206 students in 2018-19 making it the second-largest undergraduate program at Kean University. The Computer Science, Information Technology and Environmental Biology programs have also stood out as programs that have grown continually over the last five years with both programs also gaining 5-year highs in 2017-18.

Table 1: Five Year Enrollment Data for NAHS

NAHS		Fall 14	Fall 15	Fall 16	Fall 17	Fall 18
Mathematics	Math. Science (UG)	202	178	177	217	220
	Certificates (UG)	2	1	0	1	0
	<b>Subtotal</b>	<b>204</b>	<b>179</b>	<b>177</b>	<b>218</b>	<b>220</b>
Computer Science	Computer Science (UG)	364	419	454	502	561
	Information Technology (UG)	121	153	167	189	188
	<b>Subtotal</b>	<b>485</b>	<b>572</b>	<b>621</b>	<b>691</b>	<b>749</b>
Nursing	Nursing (UG)	416	389	338	186	137
	Certificates (UG)	1	0	0	0	0
	<b>Subtotal</b>	<b>417</b>	<b>389</b>	<b>338</b>	<b>186</b>	<b>137</b>
Natural Sciences	Biology (UG)	969	1020	1086	1174	1206
	Chemistry (UG)	96	82	72	61	61
	HIM (UG)	38	40	48	30	29
	Medical Tech. (UG)	70	74	76	61	67
	Certificates (UG)	1	1	1	1	0
	<b>Subtotal</b>	<b>1174</b>	<b>1217</b>	<b>1283</b>	<b>1327</b>	<b>1363</b>
Env Sust Sci	Biology-BS Env (UG)	35	35	40	50	55
	Earth Science (UG)	41	35	40	52	50
	Sustainability Science (UG)	17	24	28	21	22
	Certificates (UG)	1	0	0	0	0
	<b>Subtotal</b>	<b>94</b>	<b>94</b>	<b>108</b>	<b>123</b>	<b>127</b>
NAHS Other	HighSchool Agreement Prog (UG)	0	0	0	16	14
	<b>Subtotal</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>14</b>
NAHS Total	<b>Total</b>	<b>2374</b>	<b>2451</b>	<b>2527</b>	<b>2561</b>	<b>2610</b>

## Graduation Rates (4-year and 6-year graduation rates)

### School of Natural Sciences: *Biology*

Retention & Graduation Rate						
For First-Time Full-Time Undergraduate Cohorts						
Second-Year Retention Rate						
Cohort Year	2012	2013	2014	2015	2016	2017
Cohort Number	163	162	146	156	207	205
2nd Year Retention #	105	116	98	101	127	127
2nd Year Retention %	64.4%	71.6%	67.1%	64.7%	61.4%	62.0%
Graduation Rate						
Cohort Year	2009	2010	2011	2012	2013	2014
Cohort Number	137	167	208	163	162	146
4-Year Graduation #	26	22	26	22	23	23
4-Year Graduation %	19.0%	13.2%	12.5%	13.5%	14.2%	15.8%
5-Year Graduation (accum.) #	43	37	46	34	45	
5-Year Graduation (accum.) %	31.4%	22.2%	22.1%	20.9%	27.8%	
6-Year Graduation (accum.) #	48	41	53	41		
6-Year Graduation (accum.) %	35.0%	24.6%	25.5%	25.2%		

### School of Natural Sciences: *Chemistry*

Retention & Graduation Rate						
For First-Time Full-Time Undergraduate Cohorts						
Second-Year Retention Rate						
Cohort Year	2012	2013	2014	2015	2016	2017
Cohort Number	8	11	18	9	6	8
2nd Year Retention #	7	7	12	2	1	1
2nd Year Retention %	87.5%	63.6%	66.7%	22.2%	16.7%	12.5%
Graduation Rate						
Cohort Year	2009	2010	2011	2012	2013	2014
Cohort Number	7	19	23	8	11	18
4-Year Graduation #	0	1	0	0	0	2
4-Year Graduation %	0.0%	5.3%	0.0%	0.0%	0.0%	11.1%
5-Year Graduation (accum.) #	0	3	2	0	0	
5-Year Graduation (accum.) %	0.0%	15.8%	8.7%	0.0%	0.0%	
6-Year Graduation (accum.) #	0	3	3	0		
6-Year Graduation (accum.) %	0.0%	15.8%	13.0%	0.0%		

School of Computing Sciences: *Computer Science*

**Retention & Graduation Rate**  
For First-Time Full-Time Undergraduate Cohorts

**Second-Year Retention Rate**

Cohort Year	2012	2013	2014	2015	2016	2017
Cohort Number	42	38	53	73	83	95
2nd Year Retention #	28	19	34	41	55	58
2nd Year Retention %	66.7%	50.0%	64.2%	56.2%	66.3%	61.1%

**Graduation Rate**

Cohort Year	2009	2010	2011	2012	2013	2014
Cohort Number	18	31	46	42	38	53
4-Year Graduation #	2	2	6	4	1	4
4-Year Graduation %	11.1%	6.5%	13.0%	9.5%	2.6%	7.5%
5-Year Graduation (accum.) #	3	6	10	10	2	
5-Year Graduation (accum.) %	16.7%	19.4%	21.7%	23.8%	5.3%	
6-Year Graduation (accum.) #	5	6	10	11		
6-Year Graduation (accum.) %	27.8%	19.4%	21.7%	26.2%		

School of Computing Sciences: *Information Technology*

**Retention & Graduation Rate**  
For First-Time Full-Time Undergraduate Cohorts

**Second-Year Retention Rate**

Cohort Year	2012	2013	2014	2015	2016	2017
Cohort Number	5	7	6	7	17	14
2nd Year Retention #	3	6	2	3	11	9
2nd Year Retention %	60.0%	85.7%	33.3%	42.9%	64.7%	64.3%

**Graduation Rate**

Cohort Year	2009	2010	2011	2012	2013	2014
Cohort Number	2	4	3	5	7	6
4-Year Graduation #	0	0	0	1	1	0
4-Year Graduation %	0.0%	0.0%	0.0%	20.0%	14.3%	0.0%
5-Year Graduation (accum.) #	0	1	0	1	2	
5-Year Graduation (accum.) %	0.0%	25.0%	0.0%	20.0%	28.6%	
6-Year Graduation (accum.) #	0	1	0	1		
6-Year Graduation (accum.) %	0.0%	25.0%	0.0%	20.0%		

**School of Environmental and Sustainability Sciences: *Environmental Biology***

**Retention & Graduation Rate**  
For First-Time Full-Time Undergraduate Cohorts

**Second-Year Retention Rate**

Cohort Year	2012	2013	2014	2015	2016	2017
Cohort Number	0	1	6	4	3	4
2nd Year Retention #	0	0	3	2	3	1
2nd Year Retention %		0.0%	50.0%	50.0%	100.0%	25.0%

**Graduation Rate**

Cohort Year	2009	2010	2011	2012	2013	2014
Cohort Number	0	0	0	0	1	6
4-Year Graduation #	0	0	0	0	0	0
4-Year Graduation %					0.0%	0.0%
5-Year Graduation (accum.) #	0	0	0	0	0	
5-Year Graduation (accum.) %					0.0%	
6-Year Graduation (accum.) #	0	0	0	0		
6-Year Graduation (accum.) %						

**School of Environmental and Sustainability Sciences: *Earth Science***

**Retention & Graduation Rate**  
For First-Time Full-Time Undergraduate Cohorts

**Second-Year Retention Rate**

Cohort Year	2012	2013	2014	2015	2016	2017
Cohort Number	6	5	5	7	11	9
2nd Year Retention #	2	1	2	3	8	5
2nd Year Retention %	33.3%	20.0%	40.0%	42.9%	72.7%	55.6%

**Graduation Rate**

Cohort Year	2009	2010	2011	2012	2013	2014
Cohort Number	7	10	8	6	5	5
4-Year Graduation #	0	3	0	1	0	0
4-Year Graduation %	0.0%	30.0%	0.0%	16.7%	0.0%	0.0%
5-Year Graduation (accum.) #	1	3	0	1	1	
5-Year Graduation (accum.) %	14.3%	30.0%	0.0%	16.7%	20.0%	
6-Year Graduation (accum.) #	2	3	0	1		
6-Year Graduation (accum.) %	28.6%	30.0%	0.0%	16.7%		

**School of Environmental and Sustainability Sciences: *Sustainability Science***

**Retention & Graduation Rate**  
For First-Time Full-Time Undergraduate Cohorts

**Second-Year Retention Rate**

Cohort Year	2012	2013	2014	2015	2016	2017
Cohort Number	1	4	0	1	3	1
2nd Year Retention #	1	0	0	0	3	0
2nd Year Retention %	100.0%	0.0%		0.0%	100.0%	0.0%

**Graduation Rate**

Cohort Year	2009	2010	2011	2012	2013	2014
Cohort Number	0	5	3	1	4	0
4-Year Graduation #	0	4	0	0	0	0
4-Year Graduation %		80.0%	0.0%	0.0%	0.0%	0.0%
5-Year Graduation (accum.) #	0	4	0	0	0	
5-Year Graduation (accum.) %		80.0%	0.0%	0.0%	0.0%	
6-Year Graduation (accum.) #	0	4	0	0		
6-Year Graduation (accum.) %		80.0%	0.0%	0.0%		

**School of Mathematical Sciences: *Mathematics***

**Retention & Graduation Rate**  
For First-Time Full-Time Undergraduate Cohorts

**Second-Year Retention Rate**

Cohort Year	2012	2013	2014	2015	2016	2017
Cohort Number	26	16	14	11	18	13
2nd Year Retention #	13	10	10	5	13	6
2nd Year Retention %	50.0%	62.5%	71.4%	45.5%	72.2%	46.2

**Graduation Rate**

Cohort Year	2009	2010	2011	2012	2013	2014
Cohort Number	34	38	27	26	16	14
4-Year Graduation #	4	1	0	1	1	1
4-Year Graduation %	11.8%	2.6%	0.0%	3.8%	6.3%	7.1
5-Year Graduation (accum.) #	8	3	5	3	2	
5-Year Graduation (accum.) %	23.5%	7.9%	18.5%	11.5%	12.5%	
6-Year Graduation (accum.) #	9	4	6	6		
6-Year Graduation (accum.) %	26.5%	10.5%	22.2%	23.1%		



## B. Program Student Learning Outcome Assessment Data and Recommendations

For each individual program, summarize the current year's program assessment (from annual reports and program reviews) including:

Program	Summary of 2018-2019 Program Assessment	Recommendations based on finding
<a href="#">Computer Science</a>	<p>Changes were made to grading and reporting of capstone data collection. Subject area project adviser to assist students in senior project were discontinued. Data shows that results from all four SLOs were impacted.</p>	<p>The subject area selection for more complex projects will continue to be discussed with the class, to establish expectations.</p> <p>The role of the design document will continue to be outlined, using additional details.</p> <p>Online presentation of the projects with videos and other network venues might be added to the curriculum.</p> <p>Find a way to identify subject area experts for all projects, including external experts.</p> <p>Find a way to monitor student project design and implementation.</p>
<a href="#">Information Technology</a>	<p>On a 100-point scale, a target of 70% or higher was reached by more than 90% of the students.</p>	<p>Implement ABET-compliant IT guide sheet (Fall 2017) in support of ABET 2020 review.</p> <p>Improve mean of SLO1 and SLO4 in Tech 1010 by providing more IT technological updates and continued emphasis on labs.</p>
<a href="#">Mathematical Sciences</a>	<p>Mathematical Sciences conducts robust assessment for Math 2415 Calculus I as this is a gateway course for math and science majors. Ten sections with 169 students from fall 2018 and ten sections with 183 students from spring 2019. Assessment shows that more than 60% of the students met the expectations of the program. Question 7 seems to be getting below 50% in both semesters.</p> <p>Math 4890 Senior Seminar, 40 students from fall 2018 and spring 2019, with over 70% of students met or exceeded expectations in every category. Two categories with great improvement in the "exceeded" expectations. This is attributed to special emphasis and efforts by faculty to assist students on producing a polished final paper based on last year's results.</p>	<p>The data shows that students still seem to respond satisfactorily to questions that were primarily computational, but poorly to conceptual questions. Course instructors for Math 2415 will take special care in the future to stress the subtleties involving concepts in question 7.</p> <p>No further action is needed at this time. Seminar instructors will continue to ensure that students are getting the best personal attention in writing the final paper.</p>

<p><a href="#">Biological Sciences BA</a></p> <p><a href="#">Biological Sciences BS Cell and Molecular</a></p> <p><a href="#">Biological Sciences BS Health Professions</a></p>	<p>Due to the large student/advisor ratio in Biology, many students are not building the integral student-advisor relationship at the desired level needed. The program is also getting feedback from alumni that are involved in graduate programs requesting more applied research experience and higher rigor in our coursework. Graduates have reported that they were lacking internship and career service assistance opportunities.</p> <p>We routinely have post-baccalaureate students take pre-requisite courses for graduate programs in Biology. A certificate program would serve them better.</p> <p>In 2017, the ETS Biology assessment study revealed that Capstone students were below the national mean in critical thinking skills, as well as knowledge of genetics and ecology. While the Biology program has provided an active peer-to-peer program for 1000 level students; these tutors have been unable to meet the academic needs of higher-level students. Therefore, additional instructors need to be hired to teach and serve as advanced-level tutors. Biology faculty will support this effort by developing and conducting training works for the new tutors of advanced-level courses.</p>	<p>Continue to train honor society members to serve as peer tutors for 1000 level courses, under the guidance of a faculty member.</p> <p>Emphasize research design and analysis in BIO Capstone sections. A research course will be implemented for 2019-20 AY (BIO 3900) to increase more applied research.</p> <p>Two additional faculty began in Fall 2019 to improve the faculty/student ratio. Biology has moved all internships to career services. This should centralize and improve internship opportunities for our students.</p> <p>Biology will assess with national standardized exam using the ETS Biology test during the 2020-21 AY.</p> <p>A request to add biology to peer tutoring will be done with the Learning Commons.</p>
<p><a href="#">Biological Sciences BS Clinical Lab Science</a></p>	<p>Due to the large student/advisor ratio in Biology, many students are not building the integral student-advisor relationship at the desired level needed. The program is also getting feedback from alumni that are involved in graduate programs requesting more applied research experience and higher rigor in our coursework. Graduates have reported that they were lacking internship and career service assistance opportunities.</p> <p>We routinely have post-baccalaureate students take pre-requisite courses for graduate programs in Biology. A certificate program would serve them better.</p> <p>In 2017, the ETS Biology assessment study revealed that Capstone students were below the national mean in critical thinking skills, as well as knowledge of genetics and ecology. While the Biology program has provided an active peer-to-peer program for 1000 level students; these tutors have been unable to meet the academic needs of higher-level students. Therefore, additional instructors need to be hired to teach and serve as advanced-level tutors. Biology faculty will support this effort by developing and conducting training</p>	<p>Continue to train honor society members to serve as peer tutors for 1000 level courses, under the guidance of a faculty member.</p> <p>Emphasize research design and analysis in BIO Capstone sections. A research course will be implemented for 2019-20 AY (BIO 3900) to increase more applied research.</p> <p>Two additional faculty began in Fall 2019 to improve the faculty/student ratio. Biology has moved all internships to career services. This should centralize and improve internship opportunities for our students.</p> <p>Biology will assess with national standardized exam using the ETS Biology test during the 2020-21 AY.</p> <p>A request to add biology to peer tutoring will be done with the Learning Commons.</p>

	<p>works for the new tutors of advanced-level courses.</p> <p>Two of the Clinical Lab Science options were discontinued so this allows a more streamlined degree choice for incoming students.</p>	
<p><a href="#">Biological Sciences</a> <a href="#">BS Medical</a> <a href="#">Technology</a></p>	<p>While Medical Technology is a joint program with Rutgers University. Students still take a major part of their instruction at Kean; therefore the program assessment and outcomes are the same as the general degree program. Specifically, many students are not building the integral student-advisor relationship at the desired level needed. The program is also getting feedback from alumni that are involved in graduate programs requesting more applied research experience and higher rigor in our coursework. Graduates have reported that they were lacking internship and career service assistance opportunities.</p> <p>In 2017, the ETS Biology assessment study revealed that Capstone students were below the national mean in critical thinking skills, as well as knowledge of genetics and ecology. While the Biology program has provided an active peer-to-peer program for 1000 level students; these tutors have been unable to meet academic needs of higher-level students. Therefore, additional instructors need to be hired to teach and serve as advanced-level tutors. Biology faculty will support this effort by developing and conducting training works for the new tutors of advanced-level courses.</p>	<p>Continue to train honor society members to serve as peer tutors for 1000 level courses, under the guidance of a faculty member.</p> <p>Emphasize research design and analysis in BIO Capstone sections. A research course will be implemented for 2019-20 AY (BIO 3900) to increase more applied research.</p> <p>Two additional faculty began in Fall 2019 to improve the faculty/student ratio. Biology has moved all internships to career services. This should centralize and improve internship opportunities for our students.</p> <p>Biology will assess with national standardized exam using the ETS Biology test during the 2020-21 AY.</p> <p>A request to add biology to peer tutoring will be done with the Learning Commons.</p>
<p><a href="#">HIM</a></p>	<p>The Health Information Management (HIM) is a joint program with Rutgers, so students are assessed based on two years of instruction at Kean. Challenges are the same for this cohort as other freshmen and sophomore students attending Kean University. Due to the large student/advisor ratio in Biology, many students are not building the integral student-advisor relationship at the desired level needed. The Biology program has provided an active peer-to-peer program for 1000 level students that involves honor society members being trained to serve as peer tutors in 1000 level courses, under the guidance of a faculty member.</p>	<p>Continue to train honor society members to serve as peer tutors for 1000 level courses, under the guidance of a faculty member.</p> <p>A request to add biology to peer tutoring will be done with the Learning Commons.</p>
<p><a href="#">Chemistry</a></p>	<p>This year, in General Chemistry, the average ACS exam grade of Kean students steadily increased from 28.3 to 29.0 to 32.1 to 35.9 in the span of 2015 and</p>	<p>For our multi section courses, General Chemistry and Organic Chemistry, we</p>

	<p>2018 as more students obtained leaked ACS exam problems.</p> <p>This year's average of 29.5 and 31.8 pts neatly fall within the range of previous exams as we introduced the internally generated final exam administered via Blackboard. This indicates difficulty of our problems were in line with ACS Exam and we feel this justifies use of our internally generated final exam in place of ACS exam. We plan to follow the average of this final exam closely in next few years if this approach can deter violation of academic integrity. 13 out 223 students score 17 or lower out of 70 questions or 94.8% all students who took the final exam passed the final exam.</p> <p>In Organic Chemistry, the multiple choice portion tracks closed to what we saw previously. Introduction of open-ended questions seems to have boosted the final grade. We conclude that our multiple choice portion of the final exam is equivalent to what ACS exam. No students scored 17 or less on the final exam.</p> <p>In general, final exam averages have been tracking close to what we have seen previous years at Kean even though we introduced internally generated final exams in place of ACS exams. We are continually monitoring all final exam results whether it is internally generated or nationally available ACS exam. The average of our students are about 1 standard deviation lower than that was published by ACS.</p>	<p>successfully transitioned to internally generated departmental exams using Blackboard from paper passed ACS exam. We were able to establish two exams are at a similar level of difficulties based on average scores collected over several years. We will keep monitoring the averages of these exams.</p> <p>Majority of students reported that they have learned to write technical reports and present chemical facts to peers (full survey report is attached). As we reported last year, this trend is not dependent on if students entered Kean as true freshmen or as transfer students with AS degrees.</p> <p>We plan to introduce technical writing systematically at lower level courses as well, especially to laboratory portion/courses.</p> <p>Some ACS exam results could not be reported because we had a hard time offering upper level courses such as Physical Chemistry Lab II, Advanced Inorganic Chemistry, Inorganic Chemistry Lab, 20 th century Physics, etc. We may be able to combine physical chemistry lab I and II to streamline the course requirement and offer more independent research opportunity for individual student. Chemistry is in the process of developing new research based courses that will increase access to students for research.</p> <p>Need increased, in-house tutoring facility in Science/Bruce complex in addition to offerings at CAS. Chemistry program began an in-house tutoring program in Spring 2018 and need space and funds to better serve our students. Chemistry is working closely with Peer Tutoring initiative.</p> <p><b><u>Need full time expertise in Analytical, Physical, and Biochemistry as well as a</u></b></p>
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		<p><b><u>instrumentation specialist as outlined in our accreditation report</u></b></p> <p>Chemistry acquired a new IR spectrophotometer in the last year that will help offer current technologies and protocols to our students.</p>
<p><u>Nursing</u></p>	<p>RN-to-BSN: The results indicate that the benchmark was achieved. However, a higher performance should be expected for next year. Sample size (10) is too small to yield statistically significance.</p> <p>MSN: Students met all the goals of the SLOs assessed.</p>	<p>Data collection should be performed and trend monitored overtime. A new course will be added to the curriculum that focus on the use of patient care technologies for effective communication and data mining to support clinical practice.</p> <p>MSN program assessment will be moving from a 4-point to a 5-point scale. A new, more comprehensive rubric was developed to better capture and assess all aspects of the final project to assure that all MSN competencies are adequately addressed.</p>
<p><u>Biology- Enviro</u></p>	<p>In ENV 2100 the average score for our pre-test results was approximately 38% and the average score for the post-test was approximately 63%. This outcome meets our targeted expectation of having average scores exceeding 60% overall and shows a significant improvement in content knowledge from the beginning to the end of the semester.</p> <p>We also saw consistent and significant improvement for all of our targeted SLOs (KU, GE, and Program) in our post-test results. The SLO for which we saw the least improvement was our program SLO5.</p> <p>One consideration regarding our results; these pre/post tests were given anonymously and the scores were not counted toward the student grades. This is something we may want to consider changing for future assessments. If this assessment were counted toward the course grade, students may have put in more effort and the overall scores would have likely been higher. It may also be worthwhile to look into using Blackboard to administer our pre/post test assessments in the future so that we can better catalog the data across sections for past semesters and so that the students can also see their pre/post test outcomes.</p>	<p>While we observed the outcomes we had targeted for this assessment, we can work on improving our results with regard to our program SLO5. This SLO focuses on the interconnectedness within the sciences and between the sciences and larger global society.</p> <p>Improvements in this area can be achieved through incorporating more interdisciplinary work into the course. This may include collaboration with other departments or outside organizations on projects of a larger scope.</p>

<p><a href="#">Earth Science</a></p>	<p>Across all sections of ENV 1000, the average score for the pre-test was approximately 37% and the average score for the post-test was approximately 54%. This outcome meets our targeted expectation of having average scores exceeding 50% overall for most sections, however not all sections were successful in meeting this target. Section 01 did not exceed the 50% target for the post-test results. This may have been a result of instructional differences, this section was taught by one of our adjunct instructors. The remaining sections did each exceed the 50% target, but none of them by more than 10 percentage points.</p> <p>We saw consistent and significant improvement for all of our targeted SLOs (KU, GE, and Program) across all sections of this course.</p> <p>One consideration regarding our results; these pre/post tests were given anonymously and the scores were not counted toward the student grades. This is something we may want to consider changing for future assessments. If this assessment were counted toward the course grade, students may have put in more effort and the overall scores would have likely been higher. It may also be worthwhile to look into using Blackboard to administer our pre/post test assessments in the future so that we can better catalog the data across sections for past semesters and so that the students can also see their pre/post test outcomes.</p>	<p>Based on the fact that one of our sections was not able to exceed the target result of 50%, it would seem that we may need to focus our efforts on improving consistency across sections of this course that are taught by different instructors. This can be done by arranging a meeting with all of the instructors to discuss the methods used, content covered etc. Also, because the scores across all sections did not exceed 50% by more than 10 points, we may need to re-evaluate the questions used in the assessment and how well they correspond to the material covered in the course.</p>
<p><a href="#">Sustainability</a></p>	<p>Between both sections of SUST 1000 the average score for our pre-test results was approximately 53% and the average score for the post-test was approximately 65%. This outcome meets our targeted expectation of having average scores exceeding 50% overall and shows improvement in content knowledge from the beginning to the end of the semester.</p> <p>We also saw improvement for most of our targeted SLOs (KU, GE, and Program) in our post-test results. The exceptions to this were a decrease in post-test scores regarding program SLO7 and GE SLO GES3. The decrease was consistent for both sections of the course with regard to these particular SLOs.</p> <p>One consideration regarding our results; these pre/post tests were given anonymously and the scores were not counted toward the student grades. This is something we may want to consider changing for future assessments. If this assessment were counted toward the course grade, students may have put in more effort and the overall scores would have likely been higher. It</p>	<p>We met our overall targeted outcomes for this assessment, but fell short of our target regarding SLO7 and GES3. GES3 involves problem solving using quantitative reasoning and program SLO7 involves utilizing tools to measure, evaluate, and problem solve in sustainability. Since both of these SLOs fell consistently in both sections, and both involve the use of quantitative measure and problem solving, this may indicate a gap where the content covered does not align with the course objectives. This may be remedied by including more course activities that are based in data analysis. This can be done by using tools in class that allow students to take measurements and analyze data first hand.</p>

	<p>may also be worthwhile to look into using Blackboard to administer our pre/post test assessments in the future so that we can better catalog the data across sections for past semesters and so that the students can also see their pre/post test outcomes.</p>	
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## Section 2: General Academic Planning

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Using the information analyzed, discuss the following:

- What do I open? Graduate program in the Biological Sciences. Post-Baccalaureate Certificate program for Allied Health Programs
- What do I close? SESS, Mathematics, and Chemistry have been asked to evaluate the number of low enrolled degree programs to see if any could be consolidated or discontinued based on guidance from VPAA.
- What needs to be supported with:
  1. More faculty are needed in Chemistry, Computer Science and Mathematics due to enrollment increases and lack of expertise in certain areas of industry trends and future growth. The need is especially urgent in Chemistry due to accreditation standards.
  2. Other resources? Expansion of the peer tutoring into other science subjects would be beneficial.
- What actions will be taken to strengthen the programs and the College-at-Large?
  1. T217 has been identified to provide additional tutoring support for Biology, Chemistry and Math. CNAHS is working with the library teaching support unit to formalize the new space justification. As of this report the space has not been allocated.
  2. The Makerspace needs to be updated due to Computer Science's new \$1.6M NSF grant. The Makerspace will be used not only by CNAHS, but also by the Design programs and is open to the entire university upon request.
  3. The School of Nursing should be moved under NWGC in order to consolidate all clinical health science programs.

## Section 3: College Resource Needs

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### A. Faculty and Staff Resource Needs

Enrollment increase predicted in Biology, Computer Science and Mathematics will require additional faculty, especially research faculty, to be hired. New faculty will involve students in research, provide

additional mentorship to students in the majors and teach courses in new programs and industry trends. See enrollment table in section 1.

Faculty needs for Sept 2020:

Biology/Chemistry: 2 faculty.

Computer Science: 2 faculty.

Mathematics: 1 faculty.

## **B. General Resource Needs**

Discuss general resource needs **using supporting data and a rationale** connected to Section 2 (General Academic Planning) and individual program data with respect to the following:

### **Space, space and space.**

Offices for faculty and support personnel, teaching classrooms/research laboratories need to be created, reallocated and updated based on enrollment trends (see section 1). Biology currently has one office to accommodate ~30 adjunct faculty. Computer science has also run out of space in NAAB and is looking for available space. The new Science Addition will help alleviate the need for research space but not office space. We recommend the use of cubicle/dividers for certain rooms to allow multiple adjuncts to share the same room. School of Mathematical Sciences can be moved out of the Science Building to a new location to allow the Science Building to be used by Biology, Chemistry, Environmental and Physics.

## **C. Pedagogical/Curricular Needs**

Discuss pedagogical/ curricular resource needs **using supporting data and a rationale** connected to Section 2 (General Academic Planning) and individual program data with respect to the following:

### **Program enrollment growth is such that we need additional office and classroom space. Therefore:**

With almost 600 majors, our students have commented that they are unable to find spaces to study in NAAB. Floors 3 and 5 should be made more accessible to our students and faculty, in support of our ABET and CAE efforts. Faculty and students must have the facilities needed to conduct teaching, office hours, advisement and research. All faculty offices on NAAB 2nd floor are filled and heavily in use all week. More faculty and student spaces are needed for Computer Science in NAAB. Floors 3 or 5 should be allocated to CS/IT -- this would allow students to collaborate with ease, and provide room for advisement, mock interviews, etc.



Some Townsend 2nd floor space should be allocated and renovated to provide CNAHS supplementary tutoring space for all science programs. This new space will enhance retention and graduation rates.

## Section 4: Budget Request Line Items

College (Program)	Description of Resource Request	Page # Reference (for Rationale)	Quantity Requested (where relevant)	Unit Cost (where relevant)	Total Cost (to nearest dollar)	Strategic Plan Goal (2013-2020)
<i>Example:</i> COE (B.S. Athletic Training)	<i>Example:</i> BOC Practice Exams for CAATE Licensure Exam Preparation (25 students, 4 exams each)	<i>Example:</i> pg. 2	<i>Example:</i> 100	<i>Example:</i> 25.50	<i>Example:</i> 2,550	1.1.4.2
CNAHS (BA/BS Biology)	GRE Biology Subject Test for Capstone assessment		80	150.00	12,000	1.1.3;
CNAHS (BA/BS Biology)	Organizational membership for NABT		1	149.00	149.00	1.1.3; 5.8.2
CNAHS (Biology)	Stereo-microscopes for research courses		4	8000		
CNAHS (Biology/Chem)	Freezers for forensic courses (specimen storage)		2	4000		
CNAHS (Biology/Chem)	New Distillation equipment for water		1	10000		
CNAHS (Computer Science)	Computing Research Association membership		1	765.00	765.00	5.8.2
CNAHS (Comp Sci/IT)	ABET association membership		1	925.00	925.00	5.8.2
CNAHS (Comp Sci/IT)	Makerspace updates			90,000		
CNAHS (Chemistry)	Emission Spectrometer		1	70,000	70,000	4.2.1

CNAHS (Chemistry)	Liquid Chromatography/Mass Spectrometer		1	225,000	225,000	4.2.1
CNAHS (Chemistry)	Atomic Absorbance Spectrometer		1	30,000	30,000	4.2.1
CNAHS (Chemistry)	Gas Chromatography Instruments for Organic		4	25,000	100,000	4.2.1
CNAHS (Chemistry)	Polarimetry Instrument		1	10,000	10,000	4.2.1
CNAHS (Chemistry)	Electrochemical Analyzer		1	25,000	25,000	4.2.1
CNAHS (Chemistry)	Chemical Solvent Safety Cabinets		5	1,100	5,500	4.2.1
CNAHS (Chemistry)	American Chemical Society (ACS) membership		8	175	1400	5.8.2
CNAHS (Chemistry)	Tutoring budget (yearly – 32 weeks, 8 hours a week, \$50.00 per hour)		2	12800	25600	4.2.1
CNAHS (Math)	American Mathematical Society (AMS) membership		1	1135	1135	5.8.2
CNAHS (Math)	Geometer's sketchpad software (40 units at \$26.55)-	Praxis 2 preparation	40	26.55	1062	4.2.1
CNAHS (SESS)	Student Lab printer		1	250.00	250.00	
CNAHS (SESS)	Lab bench and chemical cabinets		4	4,000.00	16,000.00	4.2.1
CNAHS (SESS)	Lab refrigerator and freezer		1	8,000.00	8,000.00	4.2.1
CNAHS (SESS)	American Assoc. of Sustainability in Higher Education (AASHE) Membership		1	1,500	1,500	5.8.2
CNAHS (SESS)	AP Environmental Science Subject Test for ENV 1000 Assessment		100	100.00	10,000	1.1.3;
CNAHS (SESS)						
CNAHS (SESS)	<i>Flow Gauge Bag</i>		250	100	25,000	
CNAHS (SESS)	<i>Drip Gauge</i>		250	115	28750	
CNAHS (SESS)	<i>Electricity Usage Monitor</i>		10	200	2000.00	

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