

Assessment Report for Chemistry Department 2021-2022 Academic Year

The Chemistry Department faculty met in-person on April 26 and May 3, 2022. The following full-time chemistry members were present: Andres Caro, Caitlin Scott, David Hales, Latorya Hicks, Shelly Bradley, Linda Desrochers, Peter Kett, Bill Gunderson.

The following full-time chemistry members were absent: Courtney Hatch (on sabbatical).

In the meetings, our goal was to assess the success of the program in meeting the following Chemistry Department learning goal:

- 2. *Design and execute laboratory experiments*

To help us assess these, we used the following assessment tools:

a) Direct assessment:

- ATEC-IRI grades (provided as a separate attached document)

b) Indirect assessment:

- Senior exit survey (provided as a separate attached document)

Learning Goal #2: *Design and Execute Laboratory Experiments*

I- Direct assessment tool: Grades on ATEC-IRI (Advanced Techniques in Experimental Chemistry- Independent Research Initiative)

Advanced Techniques in Experimental Chemistry (ATEC) is a two-semester long unified laboratory experience combining physical, inorganic, and analytical chemistry techniques, including data analysis and computational modeling. Its co-requisite is CHEM 310 (first semester) and CHEM 320 (second semester). These courses are required for the Hendrix College Chemistry major. Therefore, ATEC is representative of upper-level student learning, specifically for designing and executing experiments (Learning Goal #2). In the Independent Research Initiative (IRI), students design and execute an experiment that falls within the sub-disciplinary scope of the lab. Experiments are novel and include a research element. Students use primary scientific literature to find ideas for the lab, find chemical sources and determine the cost, carry out a safety and risk assessment, and write up the project in the form of a scientific journal article.

We used the grades of ATEC-IRI as a form of direct assessment for the learning goal “*Design and execute laboratory experiments*”. ATEC-IRI was graded following a general rubric (provided as a separate attached document) which includes a “design” component consisting of 30 points evaluating originality, approach and research, and an “execute” component consisting of 60 points evaluating notebook, procedure, data analysis and calculations, results and uncertainty calculations. ATEC-IRI grades for the past six years were compiled (provided as a separate attached document), expressed as percentage scores, and descriptive statistics were applied to the data set (Tables 1 and 2):

Table 1: Design component of ATEC-IRI. Descriptive statistics. Min stands for minimum, max stands for maximum and SE stands for standard error.

Year	Size	Range (%)	Max (%)	Min (%)	Median (%)	Mean (%)	SE (%)
2021	7	11.1	95.9	84.7	95.9	91.0	2.2
2020	10	11.0	97.0	86.0	93.5	92.3	1.1
2019	6	13.3	96.7	83.3	90.0	90.0	1.9
2018	8	20.0	100	80.0	94.2	92.1	2.4
2017	5	11.7	100	88.3	96.7	94.7	2.3
2016	11	15.0	100	85.0	93.3	91.5	1.2

Table 2: Execute component of ATEC-IRI. Descriptive Statistics. Min stands for minimum, max stands for maximum, n.d. stands for not determined, and SE stands for standard error. In 2020 and 2021, due to Covid-19 restrictions, there was no experimental component, only design.

Year	Size	Range (%)	Max (%)	Min (%)	Median (%)	Mean (%)	SE (%)
2021	0	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2020	0	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2019	6	16.7	96.7	80.0	93.3	91.1	2.4
2018	8	25.0	98.3	73.3	87.5	87.7	3.0
2017	5	8.3	93.3	85.0	86.7	88.0	1.4
2016	11	8.3	95.0	86.7	91.7	91.4	0.9

What these descriptive statistics shows is: a) for the design component of ATEC-IRI, median and mean scores in the past six years are higher than 90%, and minimum scores are between 80% and 88.3%. b) for the execute component of ATEC-IRI, median scores in the past six years are higher than 86.7%, means scores are higher than 87.7%, and minimum scores are between 73.3% and 86.7%. One-way analysis of variance was also applied on the dataset, using year as the independent variable, which revealed no significant differences among the means of the design component, among the means of the execute component, or among the means of the design and execute components combined. This can be visualized better on the following figures, representing the evolution of the mean and standard error in the past six years (Figures 1 and 2):

Figure 1: Design component of the ATEC-IRI. Mean \pm standard error.

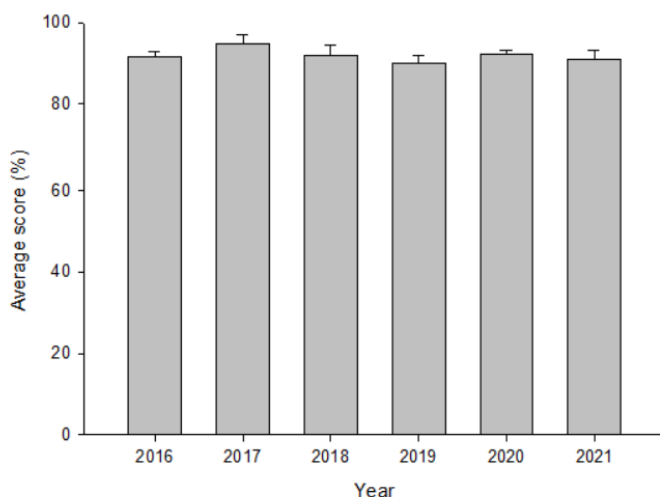
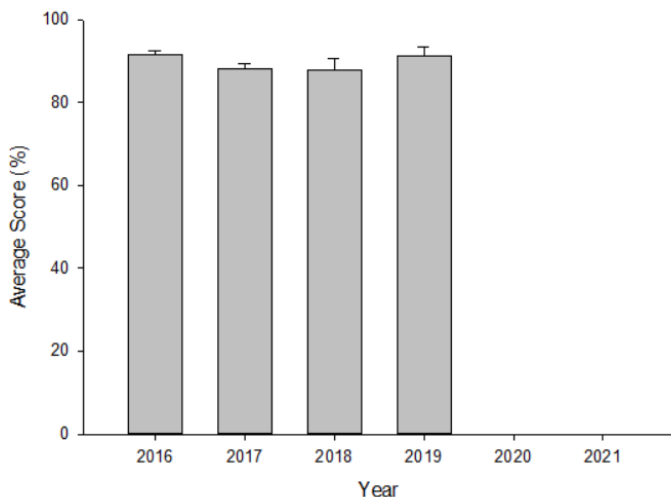


Figure 2: Execute component of the ATEC-IRI. Mean \pm standard error.



Overall, the consistently high level of academic achievement based on grades in the design and execute components of the ATEC-IRIs gives support to the conclusion that learning goal #2 is being fulfilled as part of the Chemistry program.

II- Indirect assessment tool: Senior exit surveys in the form of a Likert Scale Question: “I feel the Hendrix College Chemistry Curriculum has taught me to design and execute laboratory experiments”.

Indirect assessment of learning goal #2 was achieved by looking at the cumulative results from student responses in 2016- 2021 for the specific question on the senior survey: “I feel the Hendrix College Chemistry Curriculum has taught me to design and execute laboratory experiments”. A compilation of the senior surveys for the past six years is provided as a separate attached document. A Likert-type scale was used to rate student responses, which included these statements: strongly disagree (1), disagree (2), neither agree nor disagree (3), agree (4), strongly agree (5), and not applicable (6). Senior Survey results are shown on Table 4.

Table 4. Senior survey results. Answers to the question: “I feel the Hendrix College Chemistry Curriculum has taught me to design and execute laboratory experiments”, using a Likert-type scale described in the text above.

Year	Score					
	1	2	3	4	5	6
2021	0	0	0	4	5	0
2020	0	0	0	0	6	0
2019	0	0	0	2	1	0
2018	0	0	0	1	3	0
2017	0	0	0	3	2	0
2016	0	0	2	5	1	0
2016-2021	0	0	2	15	18	0

Cumulatively, approximately 94% of students agreed or strongly agreed with the statement being evaluated: “I feel the Hendrix College Chemistry Curriculum has taught me to design and execute laboratory experiments.”

Overall, multiple assessment measures suggest that we are meeting and exceeding achievement of learning goal #2.

III- Reflection on assessment data for learning goal #2:

Chemistry faculty reflected on the assessment data, and our discussions from the meeting and our thoughts are summarized below with future planning for assessment included:

- Students have high achievement in the assessment tools for this learning goal. However, we agreed that a more detailed rubric for ATEC-IRI is needed, which would include not only the criteria list, but also a description of the criteria, the level of performance and the scores. A discussion about the criteria and performance levels was started this year, and will continue in the Fall of 2022.
- The Covid-19 pandemics forced us to abandon the assessment of the “execute” component of this learning goal for two consecutive years. Executing lab experiments remotely in ATEC-IRI was not possible. We plan on re-instating the assessment of this partial goal in 2022-2023 now that Covid-19 restrictions have been lifted.

	scores			%		
	design/30	expt/60	total/150	design	execute	total
2021 DH & PK						
Anderson	28.8	N/A (COVID)	143.8	95.85	N/A (COVID)	95.85
Andrews	25.4	N/A (COVID)	127.1	84.73	N/A (COVID)	84.73
Bridges	28.8	N/A (COVID)	143.8	95.85	N/A (COVID)	95.85
Molloy	28.8	N/A (COVID)	143.8	95.85	N/A (COVID)	95.85
Nguyen	28.8	N/A (COVID)	143.8	95.85	N/A (COVID)	95.85
Shaw	25.4	N/A (COVID)	127.1	84.73	N/A (COVID)	84.73
Zhang	25.4	N/A (COVID)	127.1	84.73	N/A (COVID)	84.73
2020 CH & PK						
Baker	25.8	N/A (COVID)	129	86.0	N/A (COVID)	86.0
Borst	27.3	N/A (COVID)	136.5	91.0	N/A (COVID)	91.0
Crook	28.5	N/A (COVID)	142.5	95.0	N/A (COVID)	95.0
De Groodt	29.1	N/A (COVID)	145.5	97.0	N/A (COVID)	97.0
Johnson	26.4	N/A (COVID)	132	88.0	N/A (COVID)	88.0
Klinkerman	27.9	N/A (COVID)	139.5	93.0	N/A (COVID)	93.0
Odell	28.2	N/A (COVID)	141	94.0	N/A (COVID)	94.0
Parham	28.2	N/A (COVID)	141	94.0	N/A (COVID)	94.0
Sangster	28.2	N/A (COVID)	141	94.0	N/A (COVID)	94.0
Trevino	27.3	N/A (COVID)	136.5	91.0	N/A (COVID)	91.0
2019 DH & CH						
Botner	25	48	117	83.3	80.0	78.0
Brink	28	58	140	93.3	96.7	93.3
Dana	27	56	138	90.0	93.3	92.0
Dasch	26	54	134	86.7	90.0	89.3
Hayes	27	56	138	90.0	93.3	92.0
Mitchell	29	56	143	96.7	93.3	95.3
2018 DH & CH						
Belding	29	54	140	96.7	90.0	93.3
Bridges	29	50	135	96.7	83.3	90.0
Cassingham	30	56	143	100.0	93.3	95.3
Imanishimwe	27.5	58	141.25	91.7	96.7	94.2
Krone	29	59	142	96.7	98.3	94.7
Pegues	24	49	121.25	80.0	81.7	80.8
Perkins	27	44	122.5	90.0	73.3	81.7
Rivera	25.5	51	127.5	85.0	85.0	85.0
Sipes			136.25			90.8
2017 DH & PK						
Breen	26.5	52	124.5	88.3	86.7	83.0
Griffin	29	52	129	96.7	86.7	86.0
Loew	30	56	133	100.0	93.3	88.7

Shah	27	51	123	90.0	85.0	82.0
Tumminello	29.5	53	129.5	98.3	88.3	86.3
2016 DH & PK						
Cone	28	52.5	136	93.3	87.5	90.7
Fobare	28	57	140.5	93.3	95	93.7
Gann	28	57	142	93.3	95.0	94.7
Gatmaitan	28	55	137	93.3	91.7	91.3
Griffin	26.5	56.5	136.5	88.3	94.2	91.0
Kim	27	55	132.5	90.0	91.7	88.3
McVinney	25.5	53.5	128.5	85.0	89.2	85.7
Patterson	26	53	131	86.7	88.3	87.3
Shuler	28	56	144	93.3	93.3	96.0
Valadie	27	52	131	90.0	86.7	87.3
Zweig	30	56	144	100.0	93.3	96.0

A TEC Lab: Independent Research Initiative

name

project title

Concept

Originality / 10

Approach / 10

Research / 10

Subtotal 0 / 30

Experimental

Notebook / 10

Procedure / 15

Data analysis & calculations / 15

Results / 10

Uncertainty calculations / 10

Subtotal 0 / 60

Write-up

Intro / 5

Theory / 10

Experimental / 10

Results & Discussion (including error) / 20

Writing and organization / 15

Subtotal 0 / 60

days late

late penalty

TOTAL 0 / 150

Chemistry Department's Survey of Graduates

Spring 2016

Number of surveys completed = 8

Question	yes	no
Did you enter Hendrix as a fresher?	7	1
Did you come to Hendrix planning to major in science?	8	0
Did you come to Hendrix planning to major in chemistry?	6	2
What are your plans after graduation?		
Unsure	0	
Job using chemistry	1	
job outside of science	0	
Grad School - Physical Science	4	
Health professional school	2	
Unrelated professional school	1	

1	strongly disagree
2	disagree
3	neutral
4	agree
5	strongly agree
6	N/A

I feel Chemistry curriculum has given me opportunity to develop a strong background in:

	1	2	3	4	5	6
Organic Chemistry	0	0	0	4	4	0
Physical Chemistry	0	0	1	4	3	0
Analytical Chemistry	0	0	1	4	2	1
Biological Chemistry	0	0	1	1	1	5
Inorganic Chemistry	0	0	1	3	4	0
Laboratory Procedures	0	0	0	2	6	0
Laboratory Safety	0	0	1	3	4	0

I feel Chemistry curriculum has taught me to:

	1	2	3	4	5	6
Acquire knowledge necessary to practice chemistry	0	0	0	3	5	0
Critically evaluate scientific articles	0	0	1	3	4	0
Search and read primary literature	0	0	0	4	4	0
Evaluate scientific information from disparate sources	0	0	0	4	4	0
Design and execute an experiment	0	0	2	5	1	0
Assess results of an experiment	0	0	0	3	5	0
Write about science effectively	0	0	0	1	7	0
Communicate scientific information	0	0	0	2	6	0
Work in a group	0	0	2	3	3	0
Understand green chemistry	0	0	0	4	4	0
Explain green chemistry to non-scientist	0	0	0	4	4	0
Explain how green chemistry is applied	0	0	0	3	5	0
Consider chemical hazards in experimental design	0	0	0	1	7	0

Chemistry Department's Survey of Graduates

Spring 2017

Number of surveys completed = 5

Question	yes	no
Did you enter Hendrix as a fresher?	5	0
Did you come to Hendrix planning to major in science?	5	0
Did you come to Hendrix planning to major in chemistry?	2	3
What are you plans after graduation?		
Unsure	0	
Job using chemistry	0	
job outside of science	0	
Grad School - Physical Science	1	
Health professional school	4	
Unrelated professional school	0	

1	strongly disagree
2	disagree
3	neutral
4	agree
5	strongly agree
6	N/A

I feel Chemistry curriculum has given me opportunity to develop a strong background in:

	1	2	3	4	5	6
1 Organic Chemistry	0	0	0	3	2	0
2 Physical Chemistry	1	0	0	2	2	0
3 Analytical Chemistry	0	0	1	0	3	1
4 Biological Chemistry	0	0	1	1	3	0
5 Inorganic Chemistry	0	0	1	2	2	0
6 Laboratory Procedures	0	0	0	1	4	0
7 Laboratory Safety	0	0	0	0	5	0

I feel Chemistry curriculum has taught me to:

	1	2	3	4	5	6
8 Acquire knowledge necessary to practice chemistry	0	0	1	1	3	0
9 Critically evaluate scientific articles	1	0	2	2	0	0
10 Search and read primary literature	0	1	1	2	1	0
Evaluate scientific information from disparate						
11 sources	0	0	3	2	0	0
12 Design and execute an experiment	0	0	0	3	2	0
13 Assess results of an experiment	0	0	0	2	3	0
14 Write about science effectively	0	0	1	3	1	0
15 Communicate scientific information	0	1	0	2	2	0
16 Work in a group	0	0	1	1	3	0
17 Understand green chemistry	0	0	1	1	3	0
18 Explain green chemistry to non-scientist	0	0	2	0	3	0
19 Explain how green chemistry is applied	0	0	1	1	3	0
20 Consider chemical hazards in experimental design	0	0	1	2	2	0

Hendrix College

Chemistry

1 - Did you enter Hendrix as a fresher?[Answer no if you were considered a transfer student when you started here.]								
Response Option	Weight	Frequency	Percent	Percent Responses		Means		
Yes	(1)	4	100.00%					
No	(2)	0	0.00%					
				0	25	50	75	100
Response Rate								
4/4 (100%)								

2 - Did you come to Hendrix planning to major in science?								
Response Option	Weight	Frequency	Percent	Percent Responses		Means		
Yes	(1)	2	50.00%					
No	(2)	2	50.00%					
				0	25	50	75	100
Response Rate								
4/4 (100%)								

3 - Did you come to Hendrix planning to major in chemistry?								
Response Option	Weight	Frequency	Percent	Percent Responses		Means		
Yes	(1)	1	25.00%					
No	(2)	3	75.00%					
				0	25	50	75	100
Response Rate								
4/4 (100%)								

4 - What are your plans after graduation?								
Response Option	Weight	Frequency	Percent	Percent Responses		Means		
Unsure	(1)	0	0.00%					
Get a job now using my chemistry education	(2)	3	75.00%					
Get a job outside of science	(3)	0	0.00%					
Go on to graduate school in one of the physical sciences or mathematics	(4)	1	25.00%					
Go on to a health related professional school (medical, dental, nursing, etc.)	(5)	0	0.00%					
Go on to an unrelated professional program (business, history, law, accounting, etc.)	(6)	0	0.00%					
				0	25	50	75	100
Response Rate								
4/4 (100%)								

5 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:								
Organic Chemistry								
Response Option	Weight	Frequency	Percent	Percent Responses		Means		
strongly disagree	(1)	0	0.00%			4.00		
disagree	(2)	1	25.00%					
neutral	(3)	0	0.00%					
agree	(4)	1	25.00%					
strongly agree	(5)	2	50.00%					
not applicable	(6)	0	0.00%					
				0	25	50	75	100
Response Rate	Mean	STD						
4/4 (100%)	4.00	1.41						

Hendrix College

Chemistry

5 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Physical Chemistry						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
strongly disagree	(1)	0	0.00%			
disagree	(2)	0	0.00%			
neutral	(3)	0	0.00%			
agree	(4)	1	25.00%			
strongly agree	(5)	3	75.00%			
not applicable	(6)	0	0.00%			
				0 25 50 75 100	Course	
Response Rate	Mean	STD				
4/4 (100%)	4.75	0.50				

5 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Analytical Chemistry						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
strongly disagree	(1)	0	0.00%			
disagree	(2)	0	0.00%			
neutral	(3)	0	0.00%			
agree	(4)	0	0.00%			
strongly agree	(5)	4	100.00%			
not applicable	(6)	0	0.00%			
				0 25 50 75 100	Course	
Response Rate	Mean	STD				
4/4 (100%)	5.00	0.00				

5 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Biological Chemistry						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
strongly disagree	(1)	0	0.00%			
disagree	(2)	0	0.00%			
neutral	(3)	3	75.00%			
agree	(4)	0	0.00%			
strongly agree	(5)	1	25.00%			
not applicable	(6)	0	0.00%			
				0 25 50 75 100	Course	
Response Rate	Mean	STD				
4/4 (100%)	3.50	1.00				

5 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Inorganic Chemistry						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
strongly disagree	(1)	0	0.00%			
disagree	(2)	0	0.00%			
neutral	(3)	0	0.00%			
agree	(4)	2	50.00%			
strongly agree	(5)	2	50.00%			
not applicable	(6)	0	0.00%			
				0 25 50 75 100	Course	
Response Rate	Mean	STD				
4/4 (100%)	4.50	0.58				

Hendrix College
Chemistry

5 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Laboratory Procedures						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
strongly disagree	(1)	0	0.00%		5.00 	
disagree	(2)	0	0.00%			
neutral	(3)	0	0.00%			
agree	(4)	0	0.00%			
strongly agree	(5)	4	100.00%			
not applicable	(6)	0	0.00%			
				0 25 50 75 100	Course	
Response Rate	Mean	STD				
4/4 (100%)	5.00	0.00				

5 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Laboratory Safety						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
strongly disagree	(1)	0	0.00%		5.00 	
disagree	(2)	0	0.00%			
neutral	(3)	0	0.00%			
agree	(4)	0	0.00%			
strongly agree	(5)	4	100.00%			
not applicable	(6)	0	0.00%			
				0 25 50 75 100	Course	
Response Rate	Mean	STD				
4/4 (100%)	5.00	0.00				

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:						
Acquire knowledge necessary to practice chemistry as a scientist.						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
strongly disagree	(1)	0	0.00%		5.00 	
disagree	(2)	0	0.00%			
neutral	(3)	0	0.00%			
agree	(4)	0	0.00%			
strongly agree	(5)	4	100.00%			
not applicable	(6)	0	0.00%			
				0 25 50 75 100	Course	
Response Rate	Mean	STD				
4/4 (100%)	5.00	0.00				

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:						
Critically evaluate the conclusions in popular and scientific articles.						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
strongly disagree	(1)	0	0.00%		5.00 	
disagree	(2)	0	0.00%			
neutral	(3)	0	0.00%			
agree	(4)	0	0.00%			
strongly agree	(5)	4	100.00%			
not applicable	(6)	0	0.00%			
				0 25 50 75 100	Course	
Response Rate	Mean	STD				
4/4 (100%)	5.00	0.00				

Hendrix College

Chemistry

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:									
Search and read the primary literature.									
Response Option	Weight	Frequency	Percent	Percent Responses		Means			
strongly disagree	(1)	0	0.00%			5.00			
disagree	(2)	0	0.00%						
neutral	(3)	0	0.00%						
agree	(4)	0	0.00%						
strongly agree	(5)	4	100.00%						
not applicable	(6)	0	0.00%						
				0	25	50	75	100	Course
Response Rate	Mean	STD							
4/4 (100%)	5.00	0.00							

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:									
Evaluate scientific information assembled from disparate sources.									
Response Option	Weight	Frequency	Percent	Percent Responses		Means			
strongly disagree	(1)	0	0.00%			5.00			
disagree	(2)	0	0.00%						
neutral	(3)	0	0.00%						
agree	(4)	0	0.00%						
strongly agree	(5)	4	100.00%						
not applicable	(6)	0	0.00%						
				0	25	50	75	100	Course
Response Rate	Mean	STD							
4/4 (100%)	5.00	0.00							

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:									
Design and execute an experiment.									
Response Option	Weight	Frequency	Percent	Percent Responses		Means			
strongly disagree	(1)	0	0.00%			4.75			
disagree	(2)	0	0.00%						
neutral	(3)	0	0.00%						
agree	(4)	1	25.00%						
strongly agree	(5)	3	75.00%						
not applicable	(6)	0	0.00%						
				0	25	50	75	100	Course
Response Rate	Mean	STD							
4/4 (100%)	4.75	0.50							

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:									
Write about science effectively (laboratory report or a paper).									
Response Option	Weight	Frequency	Percent	Percent Responses		Means			
strongly disagree	(1)	0	0.00%			5.00			
disagree	(2)	0	0.00%						
neutral	(3)	0	0.00%						
agree	(4)	0	0.00%						
strongly agree	(5)	4	100.00%						
not applicable	(6)	0	0.00%						
				0	25	50	75	100	Course
Response Rate	Mean	STD							
4/4 (100%)	5.00	0.00							

**Hendrix College
Chemistry**

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:					
Communicate scientific information effectively as a poster or oral presentation.					
Response Option	Weight	Frequency	Percent	Percent Responses	Means
strongly disagree	(1)	0	0.00%		5.00
disagree	(2)	0	0.00%		
neutral	(3)	0	0.00%		
agree	(4)	0	0.00%		
strongly agree	(5)	4	100.00%		
not applicable	(6)	0	0.00%		
				0 25 50 75 100	Course
Response Rate	Mean	STD			
4/4 (100%)	5.00	0.00			

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:					
Work in a group to accomplish science.					
Response Option	Weight	Frequency	Percent	Percent Responses	Means
strongly disagree	(1)	0	0.00%		4.25
disagree	(2)	1	25.00%		
neutral	(3)	0	0.00%		
agree	(4)	0	0.00%		
strongly agree	(5)	3	75.00%		
not applicable	(6)	0	0.00%		
				0 25 50 75 100	Course
Response Rate	Mean	STD			
4/4 (100%)	4.25	1.50			

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:					
Understand what green chemistry is.					
Response Option	Weight	Frequency	Percent	Percent Responses	Means
strongly disagree	(1)	0	0.00%		5.00
disagree	(2)	0	0.00%		
neutral	(3)	0	0.00%		
agree	(4)	0	0.00%		
strongly agree	(5)	4	100.00%		
not applicable	(6)	0	0.00%		
				0 25 50 75 100	Course
Response Rate	Mean	STD			
4/4 (100%)	5.00	0.00			

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:					
Explain what green chemistry is to a non-scientist.					
Response Option	Weight	Frequency	Percent	Percent Responses	Means
strongly disagree	(1)	0	0.00%		4.25
disagree	(2)	1	25.00%		
neutral	(3)	0	0.00%		
agree	(4)	0	0.00%		
strongly agree	(5)	3	75.00%		
not applicable	(6)	0	0.00%		
				0 25 50 75 100	Course
Response Rate	Mean	STD			
4/4 (100%)	4.25	1.50			

Hendrix College

Chemistry

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:

Explain how green chemistry is applied in a chemical laboratory.

Response Option	Weight	Frequency	Percent	Percent Responses	Means
strongly disagree	(1)	0	0.00%		
disagree	(2)	0	0.00%		
neutral	(3)	0	0.00%		
agree	(4)	0	0.00%		
strongly agree	(5)	4	100.00%		
not applicable	(6)	0	0.00%		
				0 25 50 75 100	Course
Response Rate	Mean	STD			
4/4 (100%)	5.00	0.00			

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:

Consider chemical hazards as part of experimental design.

Response Option	Weight	Frequency	Percent	Percent Responses	Means
strongly disagree	(1)	0	0.00%		
disagree	(2)	1	25.00%		
neutral	(3)	0	0.00%		
agree	(4)	0	0.00%		
strongly agree	(5)	3	75.00%		
not applicable	(6)	0	0.00%		
				0 25 50 75 100	Course
Response Rate	Mean	STD			
4/4 (100%)	4.25	1.50			

7 - I perceived the strength of the overall program to be:

Response Rate 3/4 (75%)

- Knowledgeable educators, extensive laboratory experience through teaching labs and undergraduate research, appropriately paced courses. Writing long reports in ATEC was very beneficial toward writing my thesis.
- The relationship between the students and the professors
- I feel like I've really grown in my paper writing abilities and in my presentations where before I had limited to no skill in either particularly. While reading scientific literature is still extremely taxing at times, finding sources and analyzing them has become easier.

8 - I would suggest the following improvements to the overall program:

Response Rate 3/4 (75%)

- Please consider reworking the Biochemistry material to engage students who do not plan on going to medical school. I would also suggest a more uniform system of grading of laboratory notebooks as the transition between notebook to no notebook in organic then back to notebooks for ATEC is jarring and difficult. Also, more attention should be given to the ATEC students when in lab (requiring the professors teaching the lab to hold no office hours or research during the 1-4 pm time slot). PLEASE MAKE SENIOR THESIS AN ACTUAL CLASS WITH A LETTER GRADE. The expectations placed on students to attend seminars outside of class hours on top of the capstone experience and the DUCK is more than enough to deserve a class similar to most other natural science majors at Hendrix.
- As a freshman I was unaware of all the requirements of a senior chemistry major, so I did not plan my four year schedule to benefit me my final year. My original adviser did not know much about the chemistry department and I didn't know what questions to ask, so by the time I declared my major and switched advisers it was too late. A meeting at the beginning of the year for students interested in majoring in chemistry might help.
- I would like to see more applications given during the classes for uses of chemistry. I enjoyed asking Dr. Kett questions about chemistry and how it relates to the world around us on even basic interactions like how and why oil separates from water. Dr. Gron was also very good at talking about applications and uses outside of a classroom for a variety of different concepts during inorganic. Dr. Hatch tends to do a good job as well but as I had her for analytical and environmental analysis it's rather biased to say that. One of the other issues is how disparate the various fields of chemistry can be from each other sometimes but that may just be the nature of the field as a whole. After organic chemistry though it seems like it's personal preference what chemistry you take the next year as you can wait until your senior year to do physical chemistry if you really want to. Another issue is how large the classes can be when BCMB majors are taking the same class, a good example is the difference from PChem 1 and PChem 2. I personally heard a lot from BCMB majors that they didn't understand why they were taking the class either.

9 - I gained the following insights from the overall program:

Response Rate 1/4 (25%)

- Chemistry is pretty hard.

Hendrix College

Chemistry Grad Survey 2019

1 - Did you enter Hendrix as a fresher?[Answer no if you were considered a transfer student when you started here.]

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Yes	(1)	3	100.00%		
No	(2)	0	0.00%		
				0 25 50 75 100	
Response Rate					
3/3 (100%)					

2 - Did you come to Hendrix planning to major in science?

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Yes	(1)	3	100.00%		
No	(2)	0	0.00%		
				0 25 50 75 100	
Response Rate					
3/3 (100%)					

3 - Did you come to Hendrix planning to major in chemistry?

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Yes	(1)	1	33.33%		
No	(2)	2	66.67%		
				0 25 50 75 100	
Response Rate					
3/3 (100%)					

4 - What are your plans after graduation?

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Unsure	(1)	1	33.33%		
Get a job now using my chemistry education	(2)	1	33.33%		
Get a job outside of science	(3)	0	0.00%		
Go on to graduate school in one of the physical sciences or mathematics	(4)	1	33.33%		
Go on to a health related professional school (medical, dental, nursing, etc.)	(5)	0	0.00%		
Go on to an unrelated professional program (business, history, law, accounting, etc.)	(6)	0	0.00%		
				0 25 50 75 100	
Response Rate					
3/3 (100%)					

• Between a potential Grad School education, Working any job I can get, and looking for an optimal job which uses the chemistry I will use I am not sure.

5 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:

Organic Chemistry

Response Option	Weight	Frequency	Percent	Percent Responses	Means
strongly disagree	(1)	0	0.00%		<p>4.00</p>
disagree	(2)	0	0.00%		
neutral	(3)	0	0.00%		
agree	(4)	3	100.00%		
strongly agree	(5)	0	0.00%		
not applicable	(6)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
3/3 (100%)	4.00	0.00			

Hendrix College
Chemistry Grad Survey 2019

5 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Physical Chemistry						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
strongly disagree	(1)	0	0.00%		4.67 	
disagree	(2)	0	0.00%			
neutral	(3)	0	0.00%			
agree	(4)	1	33.33%			
strongly agree	(5)	2	66.67%			
not applicable	(6)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
3/3 (100%)	4.67	0.58				

5 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Analytical Chemistry						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
strongly disagree	(1)	0	0.00%		5.00 	
disagree	(2)	0	0.00%			
neutral	(3)	0	0.00%			
agree	(4)	0	0.00%			
strongly agree	(5)	3	100.00%			
not applicable	(6)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
3/3 (100%)	5.00	0.00				

5 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Biological Chemistry						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
strongly disagree	(1)	0	0.00%		4.33 	
disagree	(2)	0	0.00%			
neutral	(3)	1	33.33%			
agree	(4)	1	33.33%			
strongly agree	(5)	0	0.00%			
not applicable	(6)	1	33.33%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
3/3 (100%)	4.33	1.53				

5 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Inorganic Chemistry						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
strongly disagree	(1)	0	0.00%		4.67 	
disagree	(2)	0	0.00%			
neutral	(3)	0	0.00%			
agree	(4)	1	33.33%			
strongly agree	(5)	2	66.67%			
not applicable	(6)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
3/3 (100%)	4.67	0.58				

Hendrix College
Chemistry Grad Survey 2019

5 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Laboratory Procedures						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
strongly disagree	(1)	0	0.00%		5.00 	
disagree	(2)	0	0.00%			
neutral	(3)	0	0.00%			
agree	(4)	0	0.00%			
strongly agree	(5)	3	100.00%			
not applicable	(6)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
3/3 (100%)	5.00	0.00				

5 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Laboratory Safety						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
strongly disagree	(1)	0	0.00%		5.00 	
disagree	(2)	0	0.00%			
neutral	(3)	0	0.00%			
agree	(4)	0	0.00%			
strongly agree	(5)	3	100.00%			
not applicable	(6)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
3/3 (100%)	5.00	0.00				

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:						
Acquire knowledge necessary to practice chemistry as a scientist.						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
strongly disagree	(1)	0	0.00%		4.67 	
disagree	(2)	0	0.00%			
neutral	(3)	0	0.00%			
agree	(4)	1	33.33%			
strongly agree	(5)	2	66.67%			
not applicable	(6)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
3/3 (100%)	4.67	0.58				

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:						
Critically evaluate the conclusions in popular and scientific articles.						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
strongly disagree	(1)	0	0.00%		4.67 	
disagree	(2)	0	0.00%			
neutral	(3)	0	0.00%			
agree	(4)	1	33.33%			
strongly agree	(5)	2	66.67%			
not applicable	(6)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
3/3 (100%)	4.67	0.58				

Hendrix College
Chemistry Grad Survey 2019

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:					
Search and read the primary literature.					
Response Option	Weight	Frequency	Percent	Percent Responses	Means
strongly disagree	(1)	0	0.00%		5.00
disagree	(2)	0	0.00%		
neutral	(3)	0	0.00%		
agree	(4)	0	0.00%		
strongly agree	(5)	3	100.00%		
not applicable	(6)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
3/3 (100%)	5.00	0.00			

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:					
Evaluate scientific information assembled from disparate sources.					
Response Option	Weight	Frequency	Percent	Percent Responses	Means
strongly disagree	(1)	0	0.00%		5.00
disagree	(2)	0	0.00%		
neutral	(3)	0	0.00%		
agree	(4)	0	0.00%		
strongly agree	(5)	3	100.00%		
not applicable	(6)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
3/3 (100%)	5.00	0.00			

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:					
Design and execute an experiment.					
Response Option	Weight	Frequency	Percent	Percent Responses	Means
strongly disagree	(1)	0	0.00%		4.33
disagree	(2)	0	0.00%		
neutral	(3)	0	0.00%		
agree	(4)	2	66.67%		
strongly agree	(5)	1	33.33%		
not applicable	(6)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
3/3 (100%)	4.33	0.58			

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:					
Write about science effectively (laboratory report or paper).					
Response Option	Weight	Frequency	Percent	Percent Responses	Means
strongly disagree	(1)	0	0.00%		5.00
disagree	(2)	0	0.00%		
neutral	(3)	0	0.00%		
agree	(4)	0	0.00%		
strongly agree	(5)	3	100.00%		
not applicable	(6)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
3/3 (100%)	5.00	0.00			

Hendrix College
Chemistry Grad Survey 2019

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:						
Communicate scientific information effectively as a poster or oral presentation.						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
strongly disagree	(1)	0	0.00%		<p>4.67</p>	
disagree	(2)	0	0.00%			
neutral	(3)	0	0.00%			
agree	(4)	1	33.33%			
strongly agree	(5)	2	66.67%			
not applicable	(6)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
3/3 (100%)	4.67	0.58				

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:						
Work in a group to accomplish science.						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
strongly disagree	(1)	0	0.00%		<p>4.67</p>	
disagree	(2)	0	0.00%			
neutral	(3)	0	0.00%			
agree	(4)	1	33.33%			
strongly agree	(5)	2	66.67%			
not applicable	(6)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
3/3 (100%)	4.67	0.58				

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:						
Understand what green chemistry is.						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
strongly disagree	(1)	0	0.00%		<p>4.67</p>	
disagree	(2)	0	0.00%			
neutral	(3)	0	0.00%			
agree	(4)	1	33.33%			
strongly agree	(5)	2	66.67%			
not applicable	(6)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
3/3 (100%)	4.67	0.58				

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:						
Consider chemical hazards as part of experimental design.						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
strongly disagree	(1)	0	0.00%		<p>4.67</p>	
disagree	(2)	0	0.00%			
neutral	(3)	0	0.00%			
agree	(4)	1	33.33%			
strongly agree	(5)	2	66.67%			
not applicable	(6)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
3/3 (100%)	4.67	0.58				

Hendrix College

Chemistry Grad Survey 2019

6 - I feel that the Hendrix College Chemistry curriculum has taught me to:

Appreciate the importance and practice of chemical ethics.

Response Option	Weight	Frequency	Percent	Percent Responses	Means
strongly disagree	(1)	0	0.00%		4.33
disagree	(2)	0	0.00%		
neutral	(3)	1	33.33%		
agree	(4)	0	0.00%		
strongly agree	(5)	2	66.67%		
not applicable	(6)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
3/3 (100%)	4.33	1.15			

7 - I perceived the strength of the overall program to be:

Response Rate 3/3 (100%)

- The interactions students are able to have with mentors across the department. The amount of research students are able to become involved in and present on.
- How personable nearly all of the chemistry professors are. For the most part, everyone made me excited to learn, kept me engaged, and encouraged questions to further facilitate my learning.
- Good Professors. It has been good to work with them, as they in general seem to always be happy to help. I appreciated that in general there were no extra-credit possibilities during athletics, something I grew tired of other fields.

8 - I would suggest the following improvements to the overall program:

Response Rate 3/3 (100%)

- The spring semester is very busy for chemistry majors completing the chemistry capstone. Finishing a paper, creating a presentation, and taking a comprehensive standardized test on top of classes, research, ACS talks, conferences, and extra curriculars is overwhelming. Reducing the amount of obligations for the capstone experience or spacing these obligations out in a better manner would help to reduce stress on the seniors. There are very few majors who have as many responsibilities as chemists during their senior year. Writing and presenting on an unfamiliar topic, as well as taking an ACS standardized test on top of bi-weekly seminars and quite often directed research with its own writing requirements is too much to place on the seniors.
- Reach out to freshmen and make sure they are aware of the prerequisites required to take prior to every chemistry course. Perhaps design a suggested schedule for the four years for someone wanting to major in chemistry. As a freshman I did not know what I wanted to major in and although I knew I wanted to major in a science, I did not speak up and my assigned advisor pushed creative writing classes on me. As a result, come sophomore year, I realized I had a lot of catching up to do considering I had yet to take Gen Chem and Cell Bio, etc.
- It feels like too much. I remember seniors and Juniors talking to me about how being a chemistry major is a massive time suck and I got scared from this but I guess I am a masochist so I went for it anyways (also just liked chemistry). I understand and appreciate the attempts that have been made to shorten the work load and such but it was hard on me mentally and even physically. College? right? I do think my travels abroad and being athlete helped create some of this time crunch and massive stress. I don't want anyone to fall into the same traps as me. The senior capstone is great in that it improves a lot of the techniques used to creating a paper and obtaining information, however it seemed long and tedious in comparison with other's major capstones (Life is not fair I know, or maybe it is fair and I signed up for too many things). I felt like I was glad I got to do the work in the end for the capstone but it felt unbalanced in comparison with some other's capstone work. Test+Paper+Presentation. The spread out nature of it allows students to do a lot of work on it but also it is never done because they are never perfect and it lasts all year. It would be great if the capstone was shortened time wise either lowering the number of due dates (could still have the same number of deadlines and assignments but just not be strung out). Wish I had more time to look at next year as a senior.

9 - I gained the following insights from the overall program:

Response Rate 3/3 (100%)

- I discovered what trajectory I want to follow upon graduation through my experience in the Hendrix Chemistry department.
- How to tackle a chemistry problem head on. From establishing what experiment needs to be run, to thoroughly planning out the necessary steps and keeping an organized lab notebook, to eventually analyzing data and writing it all up, you all have taught me how to be a scientist. I am forever grateful. Thank you.
- I got a better view of myself and the people around me. I am and will always be impressed with my professors. The chemistry department made me feel ready for other jobs even outside the field. There was a lot of education which will translate. Thank-you

Hendrix College



201920 Chemistry Senior Survey

1 - Thank you for taking the time to complete this survey. We understand that this has been quite an unusual end to your senior year and we are heartbroken that we have lost the ability to celebrate properly with you on the most special occasion of your graduation. Please know that we are proud of each and every one of your accomplishments and the success of your senior year. Fear not, we will celebrate soon enough. Until then, please provide us with feedback regarding your education in the Department of Chemistry to help us continue to improve the education we provide to all chemistry majors. Drs. Caro, Gron, Hales, Hatch, Kett, Dahlmann, Gunderson, Scott, Stoeckl; with Mrs. Bradley, and Mrs. Desrochers Who were you when you arrived, and where are you going now?



Response Rate 5/6 (83.33%)

- When I arrived at Hendrix College, I was interested in studying chemistry, but I was also uncertain about which career field I would want to pursue from this passion. I had discovered chemistry and mathematics to be especially interesting subjects in high school, so I made sure I took plenty of these courses. From my time spent in research and exploring scientific careers, I began the process of applying to medical school. Now, I am excited to continue on this path after graduation at UAMS.
- When I arrived at Hendrix, I was someone looking to redefine themselves. Someone torn between a love of science and business but seeking knowledge and adventure. The chemistry department gave me a place to grow and discover my passions within the sciences and for that I will forever be grateful. Now, I am a confident scientist seeking to help people through forensics and I have secured a place in a graduate program that I believe will give me a competitive edge in the forensics world.
- When I arrived at Hendrix, I was a politics major who was pre-med. I thought I was terrible at Chemistry and thought I didn't like it. Now I am a Chemistry major who hopes to get my PhD to do research in Chemistry!
- I was really confused, really lost, and really unsure if I was ever going to get the title of chemist. Now that I'm this close to having it, I am super excited to get to continue learning through a PhD program and taking on chemistry related jobs, breaking into the medical field.
- I was a pre-med math major coming in, and an environmental/analytical chemist headed out.



2 - Did you enter Hendrix as a fresher?[Answer 'No' if you were considered a transfer student.]

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Yes	(1)	6	100.00%		
No	(2)	0	0.00%		
				0 25 50 75 100	
Response Rate					
6/6 (100%)					

3 - Did you come to Hendrix planning to major in science?

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Yes	(1)	5	83.33%		
No	(2)	1	16.67%		
				0 25 50 75 100	
Response Rate					
6/6 (100%)					

4 - Did you come to Hendrix planning to major in chemistry?

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Yes	(1)	3	50.00%		
No	(2)	3	50.00%		
				0 25 50 75 100	
Response Rate					
6/6 (100%)					

Hendrix College
201920 Chemistry Senior Survey

5 - What are your plans after graduation?					
Response Option	Weight	Frequency	Percent	Percent Responses	Means
Unsure	(1)	0	0.00%		
Get a job now using my chemistry education	(2)	2	33.33%		
Get a job outside of science	(3)	0	0.00%		
Go on to graduate school in one of the physical sciences or mathematics	(4)	2	33.33%		
Go on to a health related professional school (medical, dental, nursing etc.)	(5)	2	33.33%		
Go on to an unrelated professional program (business, history, law, accounting, etc.)	(6)	0	0.00%		
				0 25 50 75 100	
Response Rate					
6/6 (100%)					
• Get a job for a year and then hopefully graduate school!					

6 - Do you consider yourself to be underrepresented in the sciences?					
Response Option	Weight	Frequency	Percent	Percent Responses	Means
Yes	(1)	3	50.00%		
No	(2)	3	50.00%		
				0 25 50 75 100	
Response Rate					
6/6 (100%)					

7 - Please indicate your response to the following:					
The Department of Chemistry is supportive of the academic growth of all students.					
Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly agree	(5)	6	100.00%		5.00
Agree	(4)	0	0.00%		
Neither agree nor disagree	(3)	0	0.00%		
Disagree	(2)	0	0.00%		
Strongly disagree	(1)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
6/6 (100%)	5.00	0.00			

8 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:					
Organic Chemistry					
Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly agree	(5)	4	66.67%		4.17
Agree	(4)	0	0.00%		
Neither agree nor disagree	(3)	1	16.67%		
Disagree	(2)	1	16.67%		
Strongly disagree	(1)	0	0.00%		
N/A	(0)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
6/6 (100%)	4.17	1.33			

Hendrix College
201920 Chemistry Senior Survey

8 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Physical Chemistry						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	3	50.00%		4.50	
Agree	(4)	3	50.00%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
6/6 (100%)	4.50	0.55				

8 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Analytical Chemistry						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	3	50.00%		4.17	
Agree	(4)	2	33.33%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	1	16.67%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
6/6 (100%)	4.17	1.17				

8 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Biological Chemistry						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	3	50.00%		4.50	
Agree	(4)	3	50.00%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
6/6 (100%)	4.50	0.55				

8 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Inorganic Chemistry						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	5	83.33%		4.83	
Agree	(4)	1	16.67%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
6/6 (100%)	4.83	0.41				

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8 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Laboratory Procedures						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	5	83.33%			
Agree	(4)	1	16.67%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
6/6 (100%)	4.83	0.41				

8 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Laboratory Safety						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	6	100.00%			
Agree	(4)	0	0.00%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
6/6 (100%)	5.00	0.00				

9 - I feel that the Hendrix College Chemistry curriculum has taught me to:						
Acquire knowledge necessary to practice chemistry as a scientist.						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	6	100.00%			
Agree	(4)	0	0.00%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
6/6 (100%)	5.00	0.00				

9 - I feel that the Hendrix College Chemistry curriculum has taught me to:						
Critically evaluate the conclusions in popular and scientific articles.						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	4	66.67%			
Agree	(4)	1	16.67%			
Neither agree nor disagree	(3)	1	16.67%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
6/6 (100%)	4.50	0.84				

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9 - I feel that the Hendrix College Chemistry curriculum has taught me to:						
Search and read the primary literature.						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	5	83.33%			
Agree	(4)	1	16.67%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
6/6 (100%)	4.83	0.41				

9 - I feel that the Hendrix College Chemistry curriculum has taught me to:						
Evaluate scientific information assembled from disparate sources.						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	5	83.33%			
Agree	(4)	1	16.67%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
6/6 (100%)	4.83	0.41				

9 - I feel that the Hendrix College Chemistry curriculum has taught me to:						
Design and execute an experiment.						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	6	100.00%			
Agree	(4)	0	0.00%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
6/6 (100%)	5.00	0.00				

9 - I feel that the Hendrix College Chemistry curriculum has taught me to:						
Write about science effectively as a poster or oral presentation.						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	5	83.33%			
Agree	(4)	1	16.67%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
6/6 (100%)	4.83	0.41				

Hendrix College
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9 - I feel that the Hendrix College Chemistry curriculum has taught me to:						
Work in a group to accomplish science.						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	5	83.33%		4.83	
Agree	(4)	1	16.67%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
6/6 (100%)	4.83	0.41				

9 - I feel that the Hendrix College Chemistry curriculum has taught me to:						
Understand what 'green chemistry' is.						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	6	100.00%		5.00	
Agree	(4)	0	0.00%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
6/6 (100%)	5.00	0.00				

9 - I feel that the Hendrix College Chemistry curriculum has taught me to:						
Consider chemical hazards as part of experimental design.						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	6	100.00%		5.00	
Agree	(4)	0	0.00%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
6/6 (100%)	5.00	0.00				

9 - I feel that the Hendrix College Chemistry curriculum has taught me to:						
Appreciate the importance and practice of chemical ethics.						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	5	83.33%		4.67	
Agree	(4)	0	0.00%			
Neither agree nor disagree	(3)	1	16.67%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
6/6 (100%)	4.67	0.82				

Hendrix College

201920 Chemistry Senior Survey

10 - Consider the Hendrix College Chemistry Program Overall perceived the strength of the overall program to be:

Response Rate	6/6 (100%)
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- The labs, especially ATEC. I felt that I got a ton of lab experience and would be confident in a chemical lab for my job.
- An amazing, supportive faculty. Also the amount of opportunities for research experience.
- The smaller class sizes were especially beneficial for me, because I was able to receive a lot of targeted help from my professors and teaching assistants. Because faculty knowledge and course resources were readily available for students, I felt like I could achieve and master course content at a much higher level than if I were at a larger institution. Additionally, I think ATEC lab was a super important component of my chemistry education, because I was able to familiarize myself with most major instrumental and analytical techniques in chemistry research. Although ATEC was a time-intensive and difficult course, my laboratory and cooperative skills improved greatly, and professor guidance significantly facilitated these improvements.
- The labs, especially ATEC, and how it taught me to write and evaluate scientific papers and function in a lab environment.
- Professors that are always willing to meet and help when a student is confused.
- The strengths of the program are easily the support of the faculty and also the opportunity to design and explore individualized experimentation. It wasn't until my internship last summer that I realized that Hendrix provided me with the opportunity to work with instrumentation methods that those at other schools merely get to learn about. I found that by getting to design and complete my own experiments in ATEC gave me an edge over all of the other interns working in the lab because I already had first hand knowledge not just of how things worked, but also how to program the software for the instruments. Additionally, the faculty in the chemistry department has always been willing to provide extra help or just listen anytime that I needed it, and without the support over the years, I do not think that I would have the confidence to want to do this for the rest of my life. A special thanks to each one of you for helping me to find my passion.

11 - I would suggest the following improvements to the overall program:

Response Rate	5/6 (83.33%)
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- Having both the inorganic and senior capstone papers at the same time was very stressful. I would suggest the senior capstone paper be half the length, and start it in the spring semester, when the seniors have fewer (and possibly even easier) classes.
- I think there should be more assignments that require students to read current literature.
- I believe y'all have already sorted this out, but completing the Inorganic Paper and Capstone paper at the same time was very difficult, especially when there was not extra time/class time designated to the Capstone paper.
- For me, having to take inorganic and write my capstone paper at the same time was quite a chore. For a little while, I was not sure that I was going to be able to meet any of the deadlines. It was mentioned to me that the structure of the major could change in the future to avoid that overlap and I think that a change such as that would be extremely beneficial to the students. Additionally, I believe that it would be in the programs best interest to help facilitate NON-RESEARCH based internship opportunities. I know that it has value to many, but for me, I felt like I was constantly being pushed towards REU opportunities when I was looking in a totally different direction. My heart was in a lab, but not one that was performing research in the normal sense.
- If I were to improve any aspect of the chemistry program, I would try to include more computational chemistry into laboratory courses. We had an ATEC lab which involved building molecular models and describing molecular orbits, bond orders, etc, but perhaps computational tools could be utilized in biological chemistry or other courses as well. Having research hours/ credit as a chemistry degree requirement is a major change involving lots of factors, but I think students could greatly benefit from being involved in all types of projects within the department. My experience in research was one of my most significant and meaningful academic endeavors. Although most chemistry majors will end up doing some sort of research, I personally would feel like my chemistry education would be slightly incomplete if I hadn't participated in any research project at Hendrix.

12 - I gained the following insights from the overall program:

Response Rate	4/6 (66.67%)
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- I found out that laboratory work is the kind of career I want to pursue. (This may giveaway my identity, but) From Dr. Hatch's EPROACH program, it was very clear that I preferred chemistry to medicine.
- I am much more capable than I thought I was coming into college. Opportunities are endless if you work hard!
- Even though I was doubtful for a while, Hendrix, especially the chemistry department, has me well prepared for a career in the sciences. I have come out with the ability to analyze and think critically about situations that pertain to things other than what I am familiar with and I am able to draw connections between what I have learned over the last four years.
- I learned a great deal about working within a team, either in research or teaching laboratories. Understanding how I work best within a team structure has been immensely beneficial for my own professional development. Additionally, my ability to communicate science has been drastically improved through our presentations in inorganic chemistry, and this skill will also benefit me greatly in my future studies and career. Through chemistry research, I gained a lot of confidence and independence in the laboratory, and I learned effective methods for reasoning through laboratory processes and how to address potential challenges as they arise. Again, this adaptability will strengthen my effectiveness as a medical student and beyond.

Hendrix College

202021 Chemistry Senior Survey

1 - Dear Seniors, Congratulations on the completion of your Chemistry degree at Hendrix College! We are grateful to have been a central part of your college education and excited to see what the future holds in store for each and every one of you. We are so proud of you! By completing this survey, you have the opportunity to influence future directions of the program by informing the department about our strengths, suggesting improvements, and providing insights into your educational experience within the department. Thank you for your feedback. Drs. Caro, Gron, Hales, Hatch, Kett, Gunderson, Scott, Hicks; with Mrs. Bradley and Mrs. Desrochers Who were you when you arrived, and where are you going now?

Response Rate 7/9 (77.78%)

• When I arrived at Hendrix college, I was merely a nerdy kid who liked chemistry and saw a particular health profession as a set route for me. My four years here have given me insight into so many studies other than chemistry, letting me expand my interests. However, these other interests merely reinforced my love for chemistry. The community I found not only with my classmate but with my professors as well made class both fun and productive. Through research, classes, and summer programs, I have decided to continue on to pharmacy school, not because I don't want to go to chemistry graduate school, but because of the unique outlook on applied chemistry that I think I can gain from pharmacy school.

• I was a young, bright-eyed, bushy-tailed high school graduate who came onto campus ready to pursue my dream to be a scientist. I'm still young, bright-eyed, and bushy-tailed, but now I understand how much work it takes to go down the road of STEM. I'm now going to graduate school to complete a Ph.D. in chemistry (with an emphasis in analytical chemistry).

• This is a really deep question oh no. I was a pretty confident graduate from my high school, but Hendrix completely changed how I viewed myself and the world (for the better, don't worry). I'm hopefully going to be working and volunteering at Conway Regional before retaking the MCAT and reapplying to medical school!

• I came in planning to major in Chemistry and you all made that incredibly easy and worthwhile! I am going into a PhD Chemistry program at the University of Alabama starting this summer.

• When I arrived at Hendrix, I was the kid who had an easy time in high school, wanted to be a doctor, and had the next ten years of my life laid out on pages of journals. Grades were everything to me. Doing well in school was making A's, and making A's were just steps to this strict goal that I deemed "successful." This was not just when I first arrived, though. I sobbed over my first B in General Physics I and then my second in Organic Chemistry 2. Partly thanks to you guys, I have done a lot of growing even in the last year. You guys showed me what true passion for learning looked like, which is truly being humble and realizing that the field of Chemistry is far too incredible to be compared to a grade in a one-semester course. Furthermore, that I am too incredible to be compared to a grade in a one-semester course. Thank you for all your lessons, care, and guidance. For now, I am moving to Atlanta, Georgia with my friends graduating from Emory. I am about to interview for a few analytical laboratory positions. My plan is to pay rent, regain some time lost in the laboratory, remember the careful process of Chemistry I love so much, and take some time off before applying to graduate school.

• I was a pre-med student with no idea what I was going to major in when I arrived. Now, I am a chemistry major heading to grad school for chemistry!

• When I arrived I was a student who knew they were smart, but wasn't sure what kind of career or path they wanted to pursue Now, I'm going to test the waters for some of those paths

2 - Did you enter Hendrix as a fresher?[Answer 'No' if you were considered a transfer student.]

Response Option	Weight	Frequency	Percent	Percent Responses					Means
Yes	(1)	9	100.00%						
No	(2)	0	0.00%						
				0	25	50	75	100	
Response Rate									
9/9 (100%)									

3 - Did you come to Hendrix planning to major in science?

Response Option	Weight	Frequency	Percent	Percent Responses					Means
Yes	(1)	9	100.00%						
No	(2)	0	0.00%						
				0	25	50	75	100	
Response Rate									
9/9 (100%)									

4 - Did you come to Hendrix planning to major in chemistry?

Response Option	Weight	Frequency	Percent	Percent Responses					Means
Yes	(1)	5	55.56%						
No	(2)	4	44.44%						
				0	25	50	75	100	
Response Rate									
9/9 (100%)									

Hendrix College
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5 - What are your plans after graduation?						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Unsure	(1)	1	11.11%			
Get a job now using my chemistry education	(2)	1	11.11%			
Get a job outside of science	(3)	0	0.00%			
Go on to graduate school in one of the physical sciences or mathematics	(4)	4	44.44%			
Go on to a health related professional school (medical, dental, nursing etc.)	(5)	3	33.33%			
Go on to an unrelated professional program (business, history, law, accounting, etc.)	(6)	0	0.00%			
				0 25 50 75 100		
Response Rate						
9/9 (100%)						
• I have a couple interviews in the next few weeks at two companies for an analytical laboratory technician/quality control positions.						

6 - Do you consider yourself to be underrepresented in the sciences?						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Yes	(1)	4	44.44%			
No	(2)	5	55.56%			
				0 25 50 75 100		
Response Rate						
9/9 (100%)						

7 - Please indicate your response to the following:						
The Department of Chemistry is supportive of the academic growth of all students.						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	8	100.00%		5.00	
Agree	(4)	0	0.00%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
8/9 (88.89%)	5.00	0.00				

8 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Organic Chemistry						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	3	33.33%		4.22	
Agree	(4)	5	55.56%			
Neither agree nor disagree	(3)	1	11.11%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
9/9 (100%)	4.22	0.67				

Hendrix College
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8 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Physical Chemistry						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	6	66.67%			
Agree	(4)	3	33.33%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
9/9 (100%)	4.67	0.50				

8 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Analytical Chemistry						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	6	66.67%			
Agree	(4)	3	33.33%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
9/9 (100%)	4.67	0.50				

8 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Biological Chemistry						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	5	55.56%			
Agree	(4)	3	33.33%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	1	11.11%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
9/9 (100%)	4.63	0.52				

8 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Inorganic Chemistry						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	5	55.56%			
Agree	(4)	2	22.22%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	2	22.22%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
9/9 (100%)	4.71	0.49				

Hendrix College
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8 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Laboratory Procedures						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	7	77.78%			
Agree	(4)	2	22.22%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
9/9 (100%)	4.78	0.44				

8 - I feel that the Hendrix College Chemistry curriculum has given me an opportunity to develop a strong background in:						
Laboratory Safety						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	9	100.00%			
Agree	(4)	0	0.00%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
9/9 (100%)	5.00	0.00				

9 - I feel that the Hendrix College Chemistry curriculum has taught me to:						
Acquire knowledge necessary to understand chemistry as a citizen						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	8	88.89%			
Agree	(4)	1	11.11%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
9/9 (100%)	4.89	0.33				

9 - I feel that the Hendrix College Chemistry curriculum has taught me to:						
Acquire knowledge necessary to practice chemistry as a scientist.						
Response Option	Weight	Frequency	Percent	Percent Responses	Means	
Strongly agree	(5)	7	77.78%			
Agree	(4)	2	22.22%			
Neither agree nor disagree	(3)	0	0.00%			
Disagree	(2)	0	0.00%			
Strongly disagree	(1)	0	0.00%			
N/A	(0)	0	0.00%			
				0 25 50 75 100	Question	
Response Rate	Mean	STD				
9/9 (100%)	4.78	0.44				

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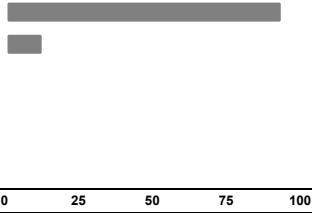
9 - I feel that the Hendrix College Chemistry curriculum has taught me to:									
Critically evaluate the conclusions in popular and scientific articles.									
Response Option	Weight	Frequency	Percent	Percent Responses		Means			
Strongly agree	(5)	6	66.67%			4.67			
Agree	(4)	3	33.33%						
Neither agree nor disagree	(3)	0	0.00%						
Disagree	(2)	0	0.00%						
Strongly disagree	(1)	0	0.00%						
N/A	(0)	0	0.00%						
				0	25	50	75	100	Question
Response Rate	Mean	STD							
9/9 (100%)	4.67	0.50							

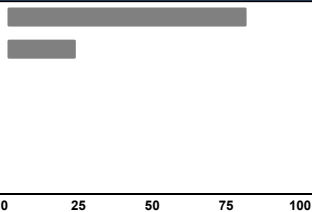
9 - I feel that the Hendrix College Chemistry curriculum has taught me to:									
Search and read the primary literature.									
Response Option	Weight	Frequency	Percent	Percent Responses		Means			
Strongly agree	(5)	8	88.89%			4.89			
Agree	(4)	1	11.11%						
Neither agree nor disagree	(3)	0	0.00%						
Disagree	(2)	0	0.00%						
Strongly disagree	(1)	0	0.00%						
N/A	(0)	0	0.00%						
				0	25	50	75	100	Question
Response Rate	Mean	STD							
9/9 (100%)	4.89	0.33							

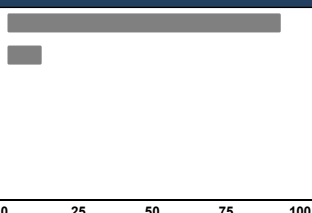
9 - I feel that the Hendrix College Chemistry curriculum has taught me to:									
Evaluate scientific information assembled from disparate sources.									
Response Option	Weight	Frequency	Percent	Percent Responses		Means			
Strongly agree	(5)	7	77.78%			4.78			
Agree	(4)	2	22.22%						
Neither agree nor disagree	(3)	0	0.00%						
Disagree	(2)	0	0.00%						
Strongly disagree	(1)	0	0.00%						
N/A	(0)	0	0.00%						
				0	25	50	75	100	Question
Response Rate	Mean	STD							
9/9 (100%)	4.78	0.44							

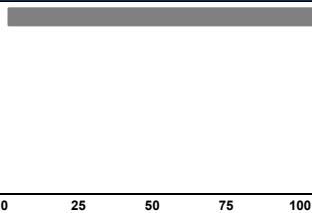
9 - I feel that the Hendrix College Chemistry curriculum has taught me to:									
Design and execute an experiment.									
Response Option	Weight	Frequency	Percent	Percent Responses		Means			
Strongly agree	(5)	4	44.44%			4.44			
Agree	(4)	5	55.56%						
Neither agree nor disagree	(3)	0	0.00%						
Disagree	(2)	0	0.00%						
Strongly disagree	(1)	0	0.00%						
N/A	(0)	0	0.00%						
				0	25	50	75	100	Question
Response Rate	Mean	STD							
9/9 (100%)	4.44	0.53							

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9 - I feel that the Hendrix College Chemistry curriculum has taught me to:									
Write about science effectively as a poster or oral presentation.									
Response Option	Weight	Frequency	Percent	Percent Responses		Means			
Strongly agree	(5)	8	88.89%			4.89			
Agree	(4)	1	11.11%						
Neither agree nor disagree	(3)	0	0.00%						
Disagree	(2)	0	0.00%						
Strongly disagree	(1)	0	0.00%						
N/A	(0)	0	0.00%						
				0	25	50	75	100	Question
Response Rate	Mean	STD							
9/9 (100%)	4.89	0.33							

9 - I feel that the Hendrix College Chemistry curriculum has taught me to:									
Work in a group to accomplish science.									
Response Option	Weight	Frequency	Percent	Percent Responses		Means			
Strongly agree	(5)	7	77.78%			4.78			
Agree	(4)	2	22.22%						
Neither agree nor disagree	(3)	0	0.00%						
Disagree	(2)	0	0.00%						
Strongly disagree	(1)	0	0.00%						
N/A	(0)	0	0.00%						
				0	25	50	75	100	Question
Response Rate	Mean	STD							
9/9 (100%)	4.78	0.44							

9 - I feel that the Hendrix College Chemistry curriculum has taught me to:									
Understand what 'green chemistry' is.									
Response Option	Weight	Frequency	Percent	Percent Responses		Means			
Strongly agree	(5)	8	88.89%			4.89			
Agree	(4)	1	11.11%						
Neither agree nor disagree	(3)	0	0.00%						
Disagree	(2)	0	0.00%						
Strongly disagree	(1)	0	0.00%						
N/A	(0)	0	0.00%						
				0	25	50	75	100	Question
Response Rate	Mean	STD							
9/9 (100%)	4.89	0.33							

9 - I feel that the Hendrix College Chemistry curriculum has taught me to:									
Consider chemical hazards as part of experimental design.									
Response Option	Weight	Frequency	Percent	Percent Responses		Means			
Strongly agree	(5)	9	100.00%			5.00			
Agree	(4)	0	0.00%						
Neither agree nor disagree	(3)	0	0.00%						
Disagree	(2)	0	0.00%						
Strongly disagree	(1)	0	0.00%						
N/A	(0)	0	0.00%						
				0	25	50	75	100	Question
Response Rate	Mean	STD							
9/9 (100%)	5.00	0.00							

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9 - I feel that the Hendrix College Chemistry curriculum has taught me to:					
Appreciate the importance and practice of chemical ethics.					
Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly agree	(5)	8	88.89%		4.78
Agree	(4)	0	0.00%		
Neither agree nor disagree	(3)	1	11.11%		
Disagree	(2)	0	0.00%		
Strongly disagree	(1)	0	0.00%		
N/A	(0)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
9/9 (100%)	4.78	0.67			

9 - I feel that the Hendrix College Chemistry curriculum has taught me to:					
Assess the ethical implications of my scientific work and its impact on society					
Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly agree	(5)	5	55.56%		4.44
Agree	(4)	3	33.33%		
Neither agree nor disagree	(3)	1	11.11%		
Disagree	(2)	0	0.00%		
Strongly disagree	(1)	0	0.00%		
N/A	(0)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
9/9 (100%)	4.44	0.73			

10 - Consider the Hendrix College Chemistry Program Overall perceived the strength of the overall program to be:	
Response Rate	8/9 (88.89%)
<ul style="list-style-type: none"> The space that professors gave the students to grow while also being supportive was the greatest strength in my opinion. To rephrase, particular courses such as ATEC, Analytical Chemistry, and Senior Seminar required us to independently research topics that interest us all while our professors offer some minimal form of help along the way. This helped me to become more academically independent. It accomplishes a good breadth of disciplines in chemistry. Additionally, many of the faculty and staff in the department have been extremely helpful to my growth personally and professionally. The faculty and staff. I cannot express how amazing they've been in supporting me and providing the patience of saints. Biochemistry was particularly fun but challenging, and Organic chemistry was hell. The program offered a broad overview of fields in Chemistry. I feel, after my four years, I have a wide-range of understanding of the many different applications and research focuses in Chemistry. I think this was a strength because before Hendrix I was not aware of all the fields that fall under the realm of Chemistry. Also, I think an additional strength was the focus on green chemistry. I think chemists should all be conscious of performing as environmentally safe chemistry as possible, when possible. Faculty that truly care about you not only as students but as people as well. Offer help with both academics and life advice First, the professors and faculty. The care, concern, and passion with which you approach your work is inspiring. Seriously, I have learned multitudes from each of you and I have never felt so supported as a student. The availability and approachability that students have with you all here are special. Second, ATEC. ATEC was the most incredible class I have ever taken it also was at the perfect time in my learning experience. After two years of teaching labs, I was ready to challenge myself and trust myself to be more independent in the lab. The structure of the class gives us time to truly learn and understand each step of the process, from theory to data analysis. I feel much more confident entering the workforce with the skills I have learned in this class. Third, Green Chemistry! I think the emphasis on Green Chemistry is crucial as we move forward and it overall helped me build better lab practices. It also requires another layer of consideration in the experimental process that has made me a more conscious scientist. ATEC! ATEC in person was so awesome. Really gave me a chance to tie everything together and feel like a true chemist. Also research! Research was an awesome experience and one that truly shaped my time at Hendrix. I think starting research early is one of the biggest reasons I decided chemistry was what I wanted to pursue. Having faculty with a wide variety of expertise and interests 	

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11 - I would suggest the following improvements to the overall program:

Response Rate	7/9 (77.78%)
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- Although I know we have academic and major advisors, I feel as if it isn't particularly necessary to meet with these advisor but twice a semester. I personally didn't really meet with my advisor much, which is mainly due to the fact that I didn't ask to meet. Perhaps there should be more frequently scheduled meetings with advisors simply to catch up on everything and discuss how the major is going.
- Some activities have become very repetitive. For example, the library visits where we are instructed on how to use their resources are probably not necessary after our 3rd year. It would also be great if the department could find a way to help students learn more about chemistry programs and careers in the Conway area. These visits would allow students to learn more about potential career paths before they graduated.
- I think less focus on exams as major points in the courses might be beneficial. I know for me, cramming for exams usually meant that I didn't end up remembering big concepts or ideas because I was caught up in how to do the math or specific situations.
- I think the Chemistry degree at Hendrix was very efficient in that Chemistry majors took courses in all of the major fields of Chemistry. While the broad course schedule was nice, I think it would be cool to have a few Chemistry electives on occasion to do a deeper dive into fields that are particularly important in current chemistry research.
- Less library days in upper level classes but rather in lower level classes as a Freshman or Sophomore. By the time of our Junior and Senior years this information seems redundant.
- Just requiring differential equations before Physical Chemistry!
- Inorganic junior year. Maybe even sophomore year. I felt like the background I needed to complete inorganic was mostly just gen chem and that waiting until after pchem wasn't really very helpful. Honestly, I think going through inorganic would've made quantum easier for me. But also, hindsight is 2020. I'm not sure that'd actually work. I'm sure you guys know what you're doing as far as course difficulty. More promotion of research. I know that there's a meeting where we go over each research lab but I don't think it's advertised and emphasized quite enough. Maybe find other ways to show how important research can be and explain why one may want to consider it. I think a lot of this could happen in a quite talk before a lecture or over email and especially by advisors.

12 - I gained the following insights from the overall program:

Response Rate	7/9 (77.78%)
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- One must be independent enough to formulate an experimental plan, understand scientific papers, and confidently work in the laboratory alone, while also being sociable and cooperative enough to efficiently work with others when possible.
- I've learned how to create experiments, think critically about problem-solving, synthesize information from many sources, and present information in coherently and effectively in a variety of platforms.
- Perspective! I knew chemistry was something I enjoyed and wanted to study more, but seeing how chemistry is so innately tied with other aspects of life and thinking is useful and good :)
- The program offered me a lot of insight to various fields and careers within Chemistry. I know more about the wide range of subjects and research focuses that Chemistry covers. Also, I really liked the focus the program put on green chemistry, as I think it is a relevant concern that all chemists should think about.
- How to properly write and communicate my science in a professional setting. The skills to make me successful in a Chemistry PhD program
- I could write a book, but I'll just say what I think is most important. I learned what type of environment I want to learn and work in, as well as the importance of collaboration. I also discovered that I am extremely interested in environmental chemistry. Most importantly, I learned how to love and be truly engaged in the science I am learning and not the grade I receive for doing so.
- I've made connections across courses. Learned to create my own projects and think through tough scientific issues. I've also learned how to communicate and work with others in the scientific community and been introduced to more than just Hendrix chemists. This has greatly expanded my network and appreciation for science overall.