

Assessment Report for the BIOL Major 2019-20 Academic Year

Dear Colleagues on the Assessment Committee,

The faculty of the Biology & Health Sciences Department have completed our annual assessment work for the BIOL major and herein report on our findings and the actions we are taking as we move forward. This year, we are assessed **Learning Goal 1 of the BIOL major**, which states that *“Biology majors will be able to describe, interpret, and integrate the fundamental principles and theories that underlie our understanding of the living world, and the empirical evidence that supports that understanding.”*

Students typically complete the direct and indirect instruments we use to assess this learning goal during their senior year. The direct assessment instruments include a Comprehensive Capstone Exam, a set of three Critiques of Primary Literature across a range of Biological fields, a Primary Literature Review paper that goes in-depth on a particular topic of the student’s choosing, a Research Proposal that requires the student to extend the research they discussed in the review paper, and a formal oral presentation that combines the Review Paper and Research Proposal. Due to the COVID-19 pandemic and transition to remote instruction and learning, the Research Proposal was altered for the spring semester students and is not included in our assessment this year. The indirect assessment instrument for all of our learning goals is a subsection of questions on the Senior Survey.

The department discussed the BIOL major and Learning Goal 1 during two meetings over the Teams platform, one on April 28, 2020, and the other on May 21, 2020. The Capstone Exam was administered in early February, so we were able to discuss it in April. We discussed the other instruments in May (except for the Senior Survey results, which just became available this week).

The data collected from the four direct assessment instruments we are using this year are listed below. A total of 26 students completed all four direct assessment assignments and are represented in the data. One additional student completed some of the direct assessment assignments but dropped the BIOL major part way through the year and is not represented in the data below. Please note that we have converted our category titles to the Capstone-Milestone-Benchmark system for this report. The rubrics we designed have four categories that we titled “Exemplary”, “Exceeds basic expectations”, “Meets basic expectations”, and “Below expectations.” We consider the Exemplary category to be equivalent to the Capstone category, the Exceeds basic expectations category to be equivalent to the Milestone category, and the Meets basic expectations category to be equivalent to the Benchmark category. We do not consider the Below expectations category to be equivalent to any translated category.

The rubrics developed for the Literature Critiques, Literature Review, and Presentation explain the levels of achievement necessary for each category and can be found in our Student Assessment Plan. The categories of student achievement for the Comprehensive Capstone Exam were discussed and agreed upon by the department faculty at the April meeting. Prior to the most recent academic year, our majors took the Major Field Test

(MFT) developed by ETS. During the most recent academic year, we developed our own multiple-choice test that covers the core courses of the BIOL major and the upper-level electives that students can take at Hendrix. All students who take the exam are required to answer the same questions related to the core courses. Each student also answers questions from two upper-level elective courses she/he has completed prior to the exam. If a student has completed more than two such courses, then he/she chooses which two elective courses will be included.

Because we designed this exam, we also collected demographic data and implemented several procedures to enable us to look for bias in the exam. At the time they took the exam, we had students complete a certainty index for each question that allowed them to express how certain they were of their answer for each question. We also had the students complete an exam wrapper one week after taking the exam. The wrapper was anonymous and was where we collected information regarding self-declared race/ethnicity, self-declared gender, self-declared LGBTQ status, self-declared socio-economic status, and self-reported GPA. On the wrapper, for each question a student got wrong on the exam, that student was asked to select a reason why she/he put down the wrong answer. All of these measures allowed us to analyze the exam results and conclude that no demographic group appeared to have been advantaged or disadvantaged by the exam questions.

Table 1. Direct Assessment Instruments Data

	Capstone	Milestone	Benchmark	Below Expectation	Incomplete
Comprehensive Exam	6	17	3	0	0
%	23.1	65.4	11.5	0	0
Literature Critiques	9	12	5	0	0
%	34.6	46.2	19.2	0	0
Literature Review	7	15	2	1	1
%	26.9	57.7	7.7	3.8	3.8
Presentation	5	18	1	1	1
%	19.2	69.2	3.8	3.8	3.8
Averages	6.75	15.5	2.75	0.5	0.5

The Capstone Exam was intended to be approximately as challenging as the MFT and no student correctly answered more than 86.7% or less than 46.7% of the core course questions. That range is similar to the range of any single year cohort of students who took the MFT. The criterion we used to assign Capstone, Milestone, and Benchmark was the percentage of correct responses on the core course questions. This is similar to how we assessed the MFT in previous years. Any student who correctly answered at least 80% of the core course questions was placed in the Capstone category. Students who correctly answered 60-79.9% of the core course questions were placed in the Milestone category. Students who correctly answered 40-59.9% of the core course questions were placed in the Benchmark category.

One student achieved Capstone level on all four direct assessment assignments and five additional students achieved Capstone level on some combination of three of the four direct assessment assignments. Similarly, one student achieved Benchmark level or below on all four direct assessment assignments and two additional students achieved Benchmark level on some combination of three of the four direct assessment assignments. Approximately two-thirds of students were in the Milestone category for most or all of the direct assessment assignments.

The indirect assessment tool that we use for our learning goals is a set of survey items that we include on the Senior Survey (included as an attachment along with this report) that graduating seniors are asked to complete just prior to the end of their last semester at Hendrix. The specific item related to learning goal one on the survey states “As a result of my education as a BIOL major, I am able to describe, interpret, and integrate the fundamental principles and theories that underlie our understanding of the living world, and the empirical evidence that supports that understanding.” Students are given six response options (Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree, and N/A).

Thirteen of the 26 BIOL seniors responded to the Senior Survey and all 13 of them responded to this specific item. Six of the 13 respondents (46.15%) strongly agreed with the prompt and the remaining seven (53.85%) agreed with the prompt. Thus, for the half of the graduating class that responded to the survey, all agreed or strongly agreed that they had accomplished learning goal 1 because of the BIOL major.

In general, the department faculty are pleased with the results for the cohort that just graduated. While we would be thrilled to see all of the students achieve Capstone level in all of the direct assessments and have them all respond “strongly agree” with the indirect assessment, we realize that is unlikely to happen, and if it did happen then it might signify that our direct assessments are miscalibrated. Our intention is for all of our majors to achieve the Milestone level and for a minority of them to achieve the Capstone level. This is indicated by the titles we used on our rubrics. We want all of the students to “exceed basic expectations”, but we do not expect them all to achieve the “exemplary” level, which is intentionally challenging for undergraduate students to achieve.

While we are generally pleased, we would like to see the number of students in the Benchmark category (or below) diminish, and ideally be zero. That is especially true for the Capstone Exam, which focusses on major themes in Biology. Students at the Benchmark level are unlikely to have learned and retained key Biological principles and theories needed to succeed in graduate/professional schools or Biology-related careers.

Our review of Learning Goal 1 has not caused us to take any new actions, but it has reinforced decisions we made last year and earlier this year. The decision we made last year was to revise our traditional introductory Biology course (BIOL 150) to make it more accessible to those who come to Hendrix lacking the foundation and skills to excel in college-level Biology. Laura MacDonald, J.D. Gantz, and Jenn Dearolf have been working to revise the course to incorporate inclusive pedagogies that are intended to facilitate the learning of all students regardless of their preparation for college-level Biology. The 2019-20 Academic year is the first full year during which we have offered a number of sections of BIOL 150 that incorporate the new pedagogical methods along with a number of

sections that are taught in the traditional format. We have been collecting data to compare the outcomes of the two versions of that course and will use that data in the next two years to decide how to proceed with that introductory course.

We made two decisions during the 2019-20 academic year for changes that will be implemented starting in the 2020-21 academic year. The first of these is that we are revising the Biology major to follow the recommendations of the Vision & Change report, a report put out by the American Association for the Advancement of Science (AAAS), which lays out a set of recommendations regarding the principles and theories that should be taught in an undergraduate Biology major as well as the skills that students need to learn to fully use the principles and theories. A second introductory-level course for our Biology major is part of the revised major we will propose during 2020-21, which would be fully implemented during the 2021-22 academic year. Students will take both introductory courses, and they can take them in either order or simultaneously. The new course (BIOL 155) is being designed by Adam Schneider and George Harper to incorporate inclusive pedagogies from the outset. That course will be offered for the first time during the Spring 2021 semester and will be taught by George Harper.

The other decision that we made this year was to have our students take a free national assessment instrument (Bio-MAPS) twice during their progression through the BIOL major. The Bio-MAPS exam was designed based on the Vision & Change recommendations and will allow us to assess the effectiveness of our revised major. All students enrolled in BIOL 150 will take the exam near the beginning of the semester during which they are enrolled in that course. Students who then go on to become BIOL majors will take the exam again during their senior year when they take the Capstone Exam. This will allow us to directly assess what the students learn by progressing through the Biology major.

We had this year's seniors take the Bio-MAPS exam in February and we received their results about a month later. This is the first cohort at Hendrix that has taken the exam, so we cannot compare them to other cohorts at Hendrix, nor can we do the comparison described above because they only took the exam at the end of their senior year. We will, however, be able to compare the results of the BIOL majors at Hendrix to students at a comparable stage of education at other institutions nationwide. That will allow us to more fully assess how successful our students were at learning the fundamental principles and theories that underlie our understanding of the living world. The national data have not been released so we have not been able to do that analysis yet this year, but we will complete that analysis during the Fall 2020 semester.

We anticipate that the changes we have already begun to implement will help the students achieve higher levels of accomplishment for learning goal 1. The revisions to BIOL 150 and the creation of BIOL 155 are intended to help all students lay a solid foundation in Biology. We will be able to report on both of those courses when we reassess learning goal 1 during the 2022-23 academic year and will report on them then. The majority of students who take the Bio-MAPS exam in BIOL 150 during the 2020-21 academic year will take it again during the 2023-24 academic year and, although that year is not the scheduled year for learning goal 1 assessment, we will review the results and begin a conversation concerning any changes the data indicate we need to make.

Hendrix College

Hendrix Biology (BIOL) Senior Survey

1 - A. Courses and Faculty

Breadth of curriculum

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Very Satisfied	(5)	4	30.77%		4.15
Satisfied	(4)	8	61.54%		
Neither Satisfied nor Dissatisfied	(3)	0	0.00%		
Dissatisfied	(2)	1	7.69%		
Very Dissatisfied	(1)	0	0.00%		
N/A	(0)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	4.15	0.80			

1 - A. Courses and Faculty

Quality of curriculum

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Very Satisfied	(5)	7	53.85%		4.54
Satisfied	(4)	6	46.15%		
Neither Satisfied nor Dissatisfied	(3)	0	0.00%		
Dissatisfied	(2)	0	0.00%		
Very Dissatisfied	(1)	0	0.00%		
N/A	(0)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	4.54	0.52			

1 - A. Courses and Faculty

Availability of courses

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Very Satisfied	(5)	2	15.38%		3.69
Satisfied	(4)	6	46.15%		
Neither Satisfied nor Dissatisfied	(3)	4	30.77%		
Dissatisfied	(2)	1	7.69%		
Very Dissatisfied	(1)	0	0.00%		
N/A	(0)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	3.69	0.85			

1 - A. Courses and Faculty

Accessibility of faculty

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Very Satisfied	(5)	6	46.15%		4.23
Satisfied	(4)	5	38.46%		
Neither Satisfied nor Dissatisfied	(3)	1	7.69%		
Dissatisfied	(2)	1	7.69%		
Very Dissatisfied	(1)	0	0.00%		
N/A	(0)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	4.23	0.93			

Hendrix College

Hendrix Biology (BIOL) Senior Survey

1 - A. Courses and Faculty

Quality of instruction

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Very Satisfied	(5)	7	53.85%		4.54
Satisfied	(4)	6	46.15%		
Neither Satisfied nor Dissatisfied	(3)	0	0.00%		
Dissatisfied	(2)	0	0.00%		
Very Dissatisfied	(1)	0	0.00%		
N/A	(0)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	4.54	0.52			

1 - A. Courses and Faculty

Preparation for professional school

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Very Satisfied	(5)	5	38.46%		4.31
Satisfied	(4)	7	53.85%		
Neither Satisfied nor Dissatisfied	(3)	1	7.69%		
Dissatisfied	(2)	0	0.00%		
Very Dissatisfied	(1)	0	0.00%		
N/A	(0)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	4.31	0.63			

1 - A. Courses and Faculty

Preparation for career

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Very Satisfied	(5)	5	38.46%		4.31
Satisfied	(4)	7	53.85%		
Neither Satisfied nor Dissatisfied	(3)	1	7.69%		
Dissatisfied	(2)	0	0.00%		
Very Dissatisfied	(1)	0	0.00%		
N/A	(0)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	4.31	0.63			

2 - Do you have any comments or observations about the courses and faculty in the BIOL program?

Response Rate	6/13 (46.15%)
- While I am very satisfied with the quality of the courses I've taken, I wish that some other courses were more available. There were two upper-level classes that were cancelled after I registered for them because not enough students signed up. I believe those courses (and several others) are only offered every couple years, which makes it difficult or impossible for someone to take in the future if they can't take them the first time they sign up. - The professors and courses in the Biology department helped me decide what I would major in, and the things I learned from them should be quite useful in graduate school. - During my four years we saw a lot of changes to the biology department. I liked the types of upper level electives offered but finding non-conflicting lab times between all the sciences is hard. - All of my courses were great, but some faculty during courses were not as available as they needed to be. When I took Ecology & Evolution, Dr. Harper was slow in responding to emails regarding the class, and often shared material we needed to go through only 14-16 hours before our class period. This was not very considerate of students who may work in the evenings and do not have time to go through an hour long lecture the night before our 8 am class. - There are some skills that are really important to landing good post-Hendrix jobs without additional schooling. I think courses like the GIS class should be made a bigger part of the curriculum, as well as maybe an advanced statistics course? Perhaps a better way to get at this would be a research methods class that just discusses not just common research skills not currently taught at Hendrix but encourages and teaches students to self teach. Also, I think geology and hydrology are huge weaknesses for all Hendrix Biology students. It would be really helpful to be able to have a better knowledge of these overall aspects of environment to integrate into our understanding of zoology, botany, and ecology. I do think the professors in our department are fantastic. The commitment everyone shows to preparing us for our future is unparalleled compared to other departments. It's obvious that all of our professors really care about us individually. - I think that as the biology department shrinks, students are paying the consequences. I wish there were more plant/botany upper level classes that are taught each year.	

Hendrix College

Hendrix Biology (BIOL) Senior Survey

3 - B. Advising

Availability of advisor

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Very Satisfied	(5)	9	69.23%		4.69
Satisfied	(4)	4	30.77%		
Neither Satisfied nor Dissatisfied	(3)	0	0.00%		
Dissatisfied	(2)	0	0.00%		
Very Dissatisfied	(1)	0	0.00%		
N/A	(0)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	4.69	0.48			

3 - B. Advising

Helpfulness of advisor

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Very Satisfied	(5)	10	76.92%		4.77
Satisfied	(4)	3	23.08%		
Neither Satisfied nor Dissatisfied	(3)	0	0.00%		
Dissatisfied	(2)	0	0.00%		
Very Dissatisfied	(1)	0	0.00%		
N/A	(0)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	4.77	0.44			

3 - B. Advising

Advisor's knowledge of requirements

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Very Satisfied	(5)	10	76.92%		4.69
Satisfied	(4)	2	15.38%		
Neither Satisfied nor Dissatisfied	(3)	1	7.69%		
Dissatisfied	(2)	0	0.00%		
Very Dissatisfied	(1)	0	0.00%		
N/A	(0)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	4.69	0.63			

3 - B. Advising

Advisor's knowledge of my goals

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Very Satisfied	(5)	9	69.23%		4.62
Satisfied	(4)	3	23.08%		
Neither Satisfied nor Dissatisfied	(3)	1	7.69%		
Dissatisfied	(2)	0	0.00%		
Very Dissatisfied	(1)	0	0.00%		
N/A	(0)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	4.62	0.65			

Hendrix College

Hendrix Biology (BIOL) Senior Survey

3 - B. Advising

Professional school advising

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Very Satisfied	(5)	9	69.23%		4.54
Satisfied	(4)	2	15.38%		
Neither Satisfied nor Dissatisfied	(3)	2	15.38%		
Dissatisfied	(2)	0	0.00%		
Very Dissatisfied	(1)	0	0.00%		
N/A	(0)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	4.54	0.78			

3 - B. Advising

Career advising

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Very Satisfied	(5)	9	69.23%		4.54
Satisfied	(4)	2	15.38%		
Neither Satisfied nor Dissatisfied	(3)	2	15.38%		
Dissatisfied	(2)	0	0.00%		
Very Dissatisfied	(1)	0	0.00%		
N/A	(0)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	4.54	0.78			

4 - Do you have any comments or observations about advising in the BIOL program?

Response Rate	9/13 (69.23%)
- I've always had extremely good experiences with my advisors, and I felt I could talk to them about anything, school or personal, that I needed help with - My advisor always gave me good feedback and direction concerning advising. - After my advisor of three years retired, I was assigned to Dr. Moran, who was impossible to find, never answered emails, and seemed annoyed to be talking to a student who was not 100% invested in ecology. Never had a class with him but I'm glad I didn't. - All of the biology professors were so willing to help advise me and provide support for post-grad plans, even if I wasn't their advisee. - Dr. Dearolf was the best advisor and I am so thankful for her mentoring me through the last few years. She always made herself available for her students and went above and beyond to help us reach our goals. She truly is an amazing person and Hendrix should recognize her hard work. 12/10 - My advisor was good but could be more knowledgeable about the requirements. It seems like they brush up on the requirements around the time of registration but aren't as knowledgeable throughout the year - My advisors have been nothing but supportive and encouraging! Doing research and taking classes with my advisor definitely helped us build a closer relationship, and helped her better understand my goals and interests. - My freshman year advisor was in the biology department so I was going to continue having them be my advisor, but I ended up losing a large scholarship due to their response as my advisor. They did not have all the information and they did not guide me to the registrar where I could find the information myself. Advisors need to either have all the information they need to give advice that will not negatively impact their advisees or they need to be certain that they provide alternate resources for information that they can't provide.	

5 - C. Research

Availability of research opportunities

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Very Satisfied	(5)	7	53.85%		4.15
Satisfied	(4)	3	23.08%		
Neither Satisfied nor Dissatisfied	(3)	2	15.38%		
Dissatisfied	(2)	0	0.00%		
Very Dissatisfied	(1)	1	7.69%		
N/A	(0)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	4.15	1.21			

Hendrix College

Hendrix Biology (BIOL) Senior Survey

5 - C. Research

Guidance for finding research opportunities

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Very Satisfied	(5)	6	46.15%		4.08
Satisfied	(4)	3	23.08%		
Neither Satisfied nor Dissatisfied	(3)	3	23.08%		
Dissatisfied	(2)	1	7.69%		
Very Dissatisfied	(1)	0	0.00%		
N/A	(0)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	4.08	1.04			

6 - Do you have any comments or observations about research in the BIOL program?

Response Rate	7/13 (53.85%)
- I think the importance/usefulness of presenting research at conferences should be made more clear to research students. I also wish I had been able to participate in the process of writing a paper and trying to get it published. - Research was probably the thing that made the major lost worth it. It gave me incredible experience, and helped me get into grad school. Definitely recommend every student do undergrad research - Research was advertised clearly, and I was quite satisfied with my research project. - Good availability and Hendrix Mafia connections are helpful too - I was able to do research with Dr. Dearolf, and it was a great experience. However, I know of other students who were not able to do research, and felt very discouraged by the lack of opportunity in the department. - I was never aware of how to find opportunities outside of Hendrix, but that was ok because I found an abundance of opportunity inside the Hendrix community. - My research professor abandoned the project after one meeting in the fall of 2019. I felt shorted because I was not only looking forward to completing the research but also hurt my ability to add research experience to my resume.	

7 - D. Overall

Overall quality of BIOL program

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Very Satisfied	(5)	6	46.15%		4.46
Satisfied	(4)	7	53.85%		
Neither Satisfied nor Dissatisfied	(3)	0	0.00%		
Dissatisfied	(2)	0	0.00%		
Very Dissatisfied	(1)	0	0.00%		
N/A	(0)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	4.46	0.52			

8 - 1. As a result of my education as a BIOL major, I am able to:

Describe, interpret, and integrate the fundamental principles and theories that underlie our understanding of the living world, and the empirical evidence that supports that understanding.

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly Agree	(5)	6	46.15%		4.46
Agree	(4)	7	53.85%		
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			
13/13 (100%)	4.46	0.52			

Hendrix College

Hendrix Biology (BIOL) Senior Survey

8 - 1. As a result of my education as a BIOL major, I am able to:

Explain the process of science

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly Agree	(5)	9	69.23%		4.62
Agree	(4)	3	23.08%		
Neither Agree nor Disagree	(3)	1	7.69%		
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			
13/13 (100%)	4.62	0.65			

8 - 1. As a result of my education as a BIOL major, I am able to:

Evaluate and critique scientific products (e.g. original research, grant proposal, review paper, theory etc...)

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly Agree	(5)	8	61.54%		4.54
Agree	(4)	4	30.77%		
Neither Agree nor Disagree	(3)	1	7.69%		
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			
13/13 (100%)	4.54	0.66			

8 - 1. As a result of my education as a BIOL major, I am able to:

Implement the scientific process to develop testable models and/or hypotheses

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly Agree	(5)	8	61.54%		4.54
Agree	(4)	4	30.77%		
Neither Agree nor Disagree	(3)	1	7.69%		
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			
13/13 (100%)	4.54	0.66			

8 - 1. As a result of my education as a BIOL major, I am able to:

Produce and deliver clear and effective oral and written communications of biological concepts and discoveries to a variety of audiences.

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly Agree	(5)	8	61.54%		4.54
Agree	(4)	4	30.77%		
Neither Agree nor Disagree	(3)	1	7.69%		
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			
13/13 (100%)	4.54	0.66			

Hendrix College

Hendrix Biology (BIOL) Senior Survey

8 - 1. As a result of my education as a BIOL major, I am able to:

Discuss and investigate how fields of biology are interconnected and engage with other scientific disciplines, including the growing role of interdisciplinarity in scientific research.

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly Agree	(5)	9	69.23%		
Agree	(4)	4	30.77%		
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			
13/13 (100%)	4.69	0.48			

8 - 1. As a result of my education as a BIOL major, I am able to:

Relate skills and knowledge of biology to other disciplines in the liberal arts and evaluate the ways in which the life sciences interface with various aspects of our society, including ethics and governance.

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly Agree	(5)	8	66.67%		
Agree	(4)	4	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			
12/13 (92.31%)	4.67	0.49			

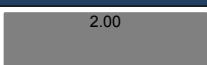
9 - A. Were you a double major?

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Yes	(1)	3	23.08%		
No	(2)	10	76.92%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	1.77	0.44			

10 - B. If your answer to the previous question was "Yes", what was your other major?

Response Rate	3/13 (23.08%)
• French • Environmental Studies • English: Creative Writing	

11 - C. Are you a transfer student from another college or university?

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Yes	(1)	0	0.00%		
No	(2)	13	100.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	2.00	0.00			

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12 - D. How many years were you at Hendrix?

Response Option		Weight	Frequency	Percent	Percent Responses	Means
1		(1)	0	0.00%		4.08
2		(2)	0	0.00%		
3		(3)	0	0.00%		
4		(4)	12	92.31%		
Other		(5)	1	7.69%		
					0255075100	Question
Response Rate		Mean	STD			
13/13 (100%)		4.08	0.28			
• 5						

13 - E. Have you applied to any postgraduate school (e.g., graduate school, medical school, dental school, veterinary school)?

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Yes	(1)	6	46.15%		1.54
No	(2)	7	53.85%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	1.54	0.52			

14 - F. If your response to the previous question was "Yes," to what type of programs did you apply? (Choose all that apply)

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Graduate Programs	(1)	5	83.33%		
Medical School	(2)	1	16.67%		
Dental School	(3)	0	0.00%		
Veterinary School	(4)	0	0.00%		
Other (please specify)	(5)	0	0.00%		
				0 25 50 75 100	
Response Rate	6/13 (46.15%)				

15 - G. If your response to the previous question (E.) was "Other," please specify here what other program you applied to?

Response Rate	1/13 (7.69%)
• MPH programs and MS programs in Infectious Disease	

16 - H. If your answer to the previous question (E.) was "No," do you intend to apply within the next few years?

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Yes	(1)	6	85.71%		1.14
No	(2)	1	14.29%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
7/13 (53.85%)	1.14	0.38			

17 - I. If you do not intend to apply to postgraduate schools this cycle, please answer the following questions regarding your future work plans.

Have you applied for a job [or internship]??

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Yes	(1)	3	37.50%		1.00
No	(2)	0	0.00%		
N/A	(0)	5	62.50%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
8/13 (61.54%)	1.00	0.00			

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17 - I. If you do not intend to apply to postgraduate schools this cycle, please answer the following questions regarding your future work plans.

If yes, have you been offered a position?

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Yes	(1)	2	25.00%		1.00
No	(2)	0	0.00%		
N/A	(0)	6	75.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
8/13 (61.54%)	1.00	0.00			

17 - I. If you do not intend to apply to postgraduate schools this cycle, please answer the following questions regarding your future work plans.

Have you accepted a position?

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Yes	(1)	2	28.57%		1.33
No	(2)	1	14.29%		
N/A	(0)	4	57.14%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
7/13 (53.85%)	1.33	0.58			

18 - J. IF you have accepted a position, please briefly describe it.

Response Rate 3/13 (23.08%)

- PhD program (GPiBS) at UAMS
- Pre-COVID-19, I had a position secured with the National Park Service at Manassas Battlefield Park implementing habitat management strategies to encourage quail and other prairie birds. Additionally, I will travel to Panama in the fall for an unpaid research internship with alumnus Rachel Wells to study canopy ants. From there, I am not sure.
- Medical Scribe

19 - A. What do you think are the strengths of the BIOL major, as it is presently constructed?

Response Rate 10/13 (76.92%)

- The breadth of information was nice. I also appreciated how some of my classes overlapped sometimes.
- Research is definitely a strength, and the faculty are an essential part of making the major work; they were incredibly supportive and knowledgeable, and helped me stay on track. I think the ability to specialize is also a major strength, I definitely appreciated being able to go heavier on molecular biology.
- I think the majority of the biology instructors are a major strength of the biology major. Most of the professors are invested in their students, both in and out of the classroom. They have a passion for teaching and create a very engaging and encouraging learning environment.
- It covers all three main sections of Biology quite well.
- Breadth of curriculum and (mostly) caring professors
- I think the diversity of the biology disciplines that are represented by the classes and faculty is a strength of the major. The faculty are so involved, caring, and passionate, and they are absolutely the greatest strength. They keep everything running smoothly even with limited funding and overbooked schedules, and they still find the time to take care of the students and provide a wonderful learning experience.
- Some strengths of the major would be the in depth curriculum. In many of my classes, we went into great depth on the topics, and I felt really challenged by the material. I think this is a very good thing, and I think those classes made me a better student.
- The Biology major is well rounded, the Hendrix biology program covers a wide range of biological fields. I feel prepared to pursue a number of different directions that I have been given a solid foundation for.
- My later courses focused on ecology, and through them I was able to become very familiar with Arkansas, which I really liked. The small class sizes in upper level courses are very conducive to dynamic and individual problem-solving. The close relationships between students and professors is also a major strength.
- The variety of topics that are taught through core classes

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20 - B. What improvements would you recommend to the BIOL major?

Response Rate	12/13 (92.31%)
- I wish I had been able to take more classes outside my major. I felt that I didn't have as liberal of an education as many of my peers in other majors. With the amount of required classes for my major and the amount of labs I had to complete, there was little time left for classes that I found interesting outside of biology. When I did have the time, I could rarely fit them into my schedule because the labs made it incredibly difficult to plan around. - I think that more field components in core/lower-level classes would be useful for getting students interested in field biology. I also think that Ecology & Evolution should be made more available to underclassmen. I think that teaching students how to use statistics software would be very useful. I struggled a lot with statistics during my time in the program, and I still don't feel very comfortable with them. - there are a lot of non-biology related topics that would be extremely helpful in ecology focused paths, such as geology and hydrology, that are not offered at hendrix. Also while there is a lot of focus on creating experiments in BIOL labs, I feel my skills for experimental design are not great. A course on researching and experimental design would be good, or perhaps structuring the labs to teach more complex topics of experimental design would be helpful. - Consider doing more oral presentations earlier on in the major. A lot of the majors I worked with had no speaking skills, and that's so important to conveying scientific information. The capstone could be adjusted. I know this is the first year it's shifted, but it would be nice to be able to use our own research to develop a capstone. Also, much of the grad school and career prep we did probably should have been done earlier; I had already applied to schools by the time I'd gotten to that section of the course. - I'd recommend that student feedback on course evaluations be given more consideration, specifically with regard to certain professors' behavior and demeanor when interacting with students. - Other than ensuring that lab work coincides directly with classwork, I cannot think of any major improvements. - Zoology is impossible-level difficulty. Maybe splitting it into a two-semester course...? - The diversity of biology disciplines is a major strength to the major, but micro/macro subjects are not integrated well in some cases. It became a more noticeable issue during my senior year when I had had an organismal biology focus up until that point but then to take two upper level cell biology courses that I felt unprepared for. Maybe intro classes could incorporate the two better. - There were a few classes I felt were lacking in the depth of the material and the intensity of the class. I think the lab for Botany could be changed. There were many labs where I felt we weren't doing anything important and I was really learning. This is not what I want in my academic experience. The lecture portion of Ecology and Evolution was the same way, for me. - There were important classes I wish I had taken but were unavailable due to there popularity. - Including some courses on geology, hydrology, and maybe forestry. - A wider range of upper level classes with deeper research into the class topic. It seemed like in my upper level classes we covered a lot of topics very shallowly instead a few topics very deeply	

21 - C. Do you have any final comments or observations about your experience as a BIOL major at Hendrix?

Response Rate	8/13 (61.54%)
- I had very few complaints about the biology major at Hendrix. I thought that the senior seminar class could use a rework. I didn't feel that I gained a semester of valuable information from it. I think it could've been a shortened course like explorations. I also had very few issues with the availability of faculty members. The only faculty member I had issues getting in touch with was Dr. Harper. Even by email, it was difficult to get a response from Dr. Harper. Though I was not in his class this semester, my peers have recently said that since classes had been moved online, they had only received 3 emails from Dr. Harper. He is a joy to communicate with once you catch him in person, but Dr. Harper could really be better about checking and responding to his email. - I feel that undergraduate research and internships prepared me for graduate school. I feel that taking Conservation Biology was very helpful in preparing me, as well. Collaborating with organizations like ANHC and AGFC as part of a class gave me more experience and I think it made me a more competitive applicant for grad programs and jobs. I think this type of collaboration with other organizations as part of class curriculum could be valuable for other classes too. - Overall I had a great experience as a Bio major. Consider doing something about zoology (coding it higher, making it easier to comprehend) that class was insanely difficult, and while I understand that our program is supposed to be more challenging than other colleges, but the fact that it was a 200 level was a choice. - I enjoyed my time as a BIOL major. The courses were interesting and mentally stimulating, and the faculty were very helpful when instructions were not clear. - Loved most of my classes - Dr. Harper is a bit scatterbrained but a nice guy. Dr. Gantz is new and somewhat overwhelmed but I feel that will settle down in the next few years as he adjusts. Dr. Schurko's teaching style is WAY better suited for upper level classes and it's nice to see him talk about something he's very interested in. - Overall I very thankful for the Biology program at Hendrix. It is why I went to Hendrix, and why I stayed. - Loved it. - I also felt like my extracurricular activities hindered my ability to take classes I wanted. I wish classes that require weekend trips were offered both semesters so that students who aren't able to take the class one semester due to jobs or sport are able to take it the next semester.	

22 - Gender:Race:Overall GPA Range: 2.0-2.5 2.5-3.0 3.0-3.5 3.5-4.0

Response Rate	13/13 (100%)
- Gender: female Race: Caucasian Overall GPA Range: 3.5-4.0 - Female Asian/White 3.5-4.0 3.0-3.5 - Female White 3.47 - Female White 3.0-3.5 3.5-4.0 Male Caucasian - F/Caucasian/3.5-4.0 - Male Caucasian 2.0-2.5 - Female White 3.5-4.0 - Female Caucasian 3.0-3.5 2.5-3.0 3.5-4.0 3.0-3.5	

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23 - Are you a first generation college student?

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Yes	(1)	0	0.00%		2.00
No	(2)	13	100.00%		
Prefer Not to Answer	(3)	0	0.00%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	2.00	0.00			

24 - Are you a member of the LGBTQ community?

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Yes	(1)	3	23.08%		1.85
No	(2)	9	69.23%		
Prefer Not to Answer	(3)	1	7.69%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	1.85	0.55			

25 - Think of the rungs of a ladder as representing where people stand in the United States. At the top of the ladder are the people who are the best off—those who have the most money, etc. At the bottom are the people who are the worst off—who have the least money, etc. Please choose a number representing the rung where you stand relative to other people in the United States.

Response Option	Weight	Frequency	Percent	Percent Responses	Means
3	(3)	1	7.69%		6.54
5	(5)	2	15.38%		
6	(6)	1	7.69%		
7	(7)	6	46.15%		
8	(8)	3	23.08%		
				0 25 50 75 100	Question
Response Rate	Mean	STD			
13/13 (100%)	6.54	1.45			