

**Assurance of Student Learning
2019-2020**

Ogden College of Science and Engineering

Departments of Biology and Chemistry

Biochemistry BS (519)

Use this page to list learning outcomes, measurements, and summarize results for your program. Detailed information must be completed in the subsequent pages.

Student Learning Outcome 1: Our graduates will have the ability to communicate effectively in written form.

Instrument 1 Evaluation of Honors Biochemistry II Paper

Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 1.

Met

Not Met

Student Learning Outcome 2: Our graduates will have the ability to read and interpret data.

Instrument 1 American Chemical Society Exam in Analytical Chemistry

Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 2.

Met

Not Met

Student Learning Outcome 3: Our graduates will have an understanding of structure-property-function relationships.

Instrument 1 American Chemical Society Exam in Organic Chemistry

Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 3.

Met

Not Met

Program Summary (Briefly summarize the action and follow up items from your detailed responses on subsequent pages.)

1. Rubric for biochemistry paper is being evaluated and refined to reflect input from multiple faculty evaluators.
2. Content reviews provided to students are being refined as more data from the question analysis is collected.

Student Learning Outcome 1

Student Learning Outcome	Our graduates will have the ability to communicate effectively in written form.		
Measurement Instrument 1	<p>Evaluation of Honors Biochemistry II paper Biochemistry II is required of all biochemistry majors but is also taken by biology and/or chemistry majors. However, the honors subsection has a very high concentration of biochemistry majors. These students were required to write a paper that evaluated arguments for or against a scientific “product” (e.g. medical marijuana, a specific herbal supplement, a type of specialized diet). Students were given feedback and scores on early submissions with a chance to resubmit the final form up to three times. The final submitted form was evaluated for writing quality.</p> <p>The instrument was assessed in a fashion consistent with the Written Communication VALUE Rubric from AAC&U. Basic parameters for Context, Content, Conventions, Sources, and Syntax were rated on the 1 to 4 scale.</p>		
Criteria for Student Success	Students should score at average numerical ranking of 2.6 or higher on the 4-level scale of the rubric. Overall scores ranged 2.8 to 3.4 with an average and median of 3.1.		
Program Success Target for this Measurement	75%	Percent of Program Achieving Target	100%
Methods	All students in the honors-embedded section submitted a paper. The instructor of the course evaluated all reports using the VALUE Rubric.		
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 2.			Met
Actions (Describe the decision-making process and actions planned for program improvement. The actions should include a timeline.)			
While writing quality is already a part of the grading criteria for the paper, future iterations of this project will more clearly convey the VALUE Rubric definitions to students in order to make the evaluation process more seamless.			
Follow-Up (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.)			
The rubric will be evaluated and refined for appropriateness for scientific writing and additional faculty will be involved in future rounds of scoring these reports.			

Student Learning Outcome 2

Student Learning Outcome	Our graduates will have the ability to read and interpret data.				
Measurement Instrument 1	American Chemical Society Exam in Analytical Chemistry This is a nationally-normed 50-question multiple choice exam given at the conclusion of the CHEM 330 (Quantitative Analysis) course (required of all biochemistry majors).				
Criteria for Student Success	50%-tile ranking or higher				
Program Success Target for this Measurement	50% of students taking the exam	Percent of Program Achieving Target	57%		
Methods	This exam was not taken by all students in the course. Those who were already at a grade criteria above an A were allowed to opt out of the exam.				
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 2.			<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="background-color: yellow;">Met</td> <td>Not Met</td> </tr> </table>	Met	Not Met
Met	Not Met				
Actions (Describe the decision-making process and actions planned for program improvement. The actions should include a timeline.)					
Course content is being evaluated in the context of exam topics. This exam is made available in an updated version approximately every two years. This update cycle allows the exam to reflect the current topical content recommended by the exam committee. A question level analysis was completed for the Fall 2019 semester. Some topical coverage was adjusted (extended lecture time, additional examples or problem sets) to better reflect current content. The changes will be continued for the Fall 2020 semester in order to collect more data on student performance.					
Follow-Up (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.)					
Students will be provided with a content review opportunity near the end of the semester. Choice of content will be guided by topics identified from both the question-level analysis of prior terms' exam results and from student requests.					

Student Learning Outcome 3

Student Learning Outcome	Our graduates will have an understanding of structure-property-function relationships.		
Measurement Instrument 1	American Chemical Society Exam in Organic Chemistry This is a nationally-normed 50-question multiple choice exam given at the conclusion of the CHEM 342 (Organic Chemistry 2) course, which is required for all biochemistry majors.		
Criteria for Student Success	50%-tile ranking or higher		
Program Success Target for this Measurement	50% of students taking the exam	Percent of Program Achieving Target	46%
Methods	This exam was taken by all students in the course.		
Based on your results, circle or highlight whether the program met the goal Student Learning Outcome 3.			Met
Not Met			
Actions (Describe the decision-making process and actions planned for program improvement. The actions should include a timeline.)			
Course content is being evaluated in the context of exam topics. This exam is made available in an updated version approximately every two years. This update cycle allows the exam to reflect the current topical content recommended by the exam committee. A question level analysis was completed for the Fall 2019 semester. Some topical coverage was adjusted (extended lecture time, additional examples or problem sets) to better reflect current content. The changes will be continued for the Fall 2020 semester in order to collect more data on student performance.			
Follow-Up (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.)			
Students will be provided with a content review opportunity near the end of the semester. Choice of content will be guided by topics identified from both the question-level analysis of prior terms' exam results and from student requests. The percentage of students meeting the "program success target" increased from 38% (AY 18/19) to 46% (AY 19/20). Additional analysis will be conducted on the Fall 2020 semester results to investigate student misconceptions.			