

## 2017-18 Student Learning Assessment Report, Academic

<b>Program:</b> Biochemistry	<b>Degree:</b> Major	<b>Department Head:</b> George Barnes	<b>Submitted By:</b> George Barnes	<b>Date Submitted:</b> 06/28/2018
<p><b>Mission:</b> Our mission is to provide a curriculum and environment that enables students to achieve a level of knowledge of chemistry or biochemistry appropriate for their chosen field or liberal arts education. We provide students with the foundation in chemistry and biochemistry necessary for their pursuit of careers in industry, research, education, engineering, health professions or other interdisciplinary fields. Our courses encourage active participation and critical understanding of safety issues and subject matter in both courses and laboratories. We strive to provide our faculty with career and research opportunities for their scholarly development and provide the college and community with a resource of knowledge and professional contribution</p>				
1. Major/Program Student Learning Outcomes Students will be able to...	2. Phase	3. Assessment Procedures (Planning/ determining)	Criteria: (How do you know students are achieving learning outcome?)	
1. Master a broad set of chemical knowledge concerning the fundamentals in the basic areas of the discipline (analytical, biochemistry, inorganic, organic and physical chemistry).	Collecting	<p>Method: (ex. tests, presentations, research paper) American Chemical Society National Standardized Exams for each subject discipline</p> <p>Using a Sample of Students? Yes</p> <p>If yes, describe your sample. All students in CHEM 120, 220, and 340 and biochemistry majors separately</p> <p>When does assessment occur? End of spring semester for 120 and 220, others may occur at the end of fall or spring semesters each year</p> <p>How often does assessment occur? The exams are administered at the end of each course which is typically once a year.</p>	50% of students will meet/exceed National Averages	

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#### 4. Assessment Results

(Collecting/ analyzing)

CHEM 120 : For all students, 64% of the scores for AY 17-18 were higher than the national average. For S18, 88% of the chemistry majors exceeded the national average.

CHEM 220 : 73% of the organic students and 85% of the biochemistry majors scored above the national average

CHEM 340 : (chemistry and biochemistry majors only) 65% of all students scored above the national average with 58% of biochemistry majors exceeding the national average.

#### Learning Outcome Met?

(Based on Criteria)

Yes

1. Major/Program Student Learning Outcomes Students will be able to...	2. Phase	3. Assessment Procedures (Planning/ determining)	Criteria: (How do you know students are achieving learning outcome?)
2. identifying the essential parts of a problem and formulating a strategy for solving the problem. They will be able to rationally estimate the solution to a problem, apply appropriate techniques to arrive at a solution, test the correctness of the solution, and interpret their results.	Collecting	Method: (ex. tests, presentations, research paper) American Chemical Society National Standardized Exams for each subject discipline  Using a Sample of Students? Yes  If yes, describe your sample. All students in CHEM 120, 220, and biochemistry majors separately  When does assessment occur? End of spring semester for 120 and 220, others may occur at the end of fall or spring semesters each year (if the courses run)  How often does assessment occur? End of spring semester for 120 and 220, others may occur at the end of fall or spring semesters each year (if the courses run). Results are analyzed every fourth year. (last S15)	50% of students will meet/exceed National Averages

**4. Assessment Results**

(Collecting/ analyzing)

In CHEM 120 and 220 the class average scores were higher than the national average.

CHEM 120 : For all students, 64% of the scores for AY 17-18 were higher than the national average. For S18, 88% of the chemistry majors exceeded the national average.

CHEM 220 : 73% of the organic students and 85% of the biochemistry majors scored above the national average

**Learning Outcome Met?**

(Based on Criteria)

Yes

1. Major/Program Student Learning Outcomes Students will be able to...	2. Phase	3. Assessment Procedures (Planning/ determining)	Criteria: (How do you know students are achieving learning outcome?)
3. Use computers in data acquisition and processing, and use available software as a tool in data analysis and modeling.	Planning  Not Done	Method: (ex. tests, presentations, research paper) Written Laboratory Reports  Using a Sample of Students? Yes  If yes, describe your sample. All students in CHEM 225 and biochemistry majors separately  When does assessment occur? For each laboratory exercise that uses data acquisition or data processing and analysis.  How often does assessment occur? Typically, more the half of ten labs fall under the rubric for this assessment. Results are analyzed every fourth year. (last S12)	At least 75% of students meet or exceed standards (a score of >15 out of 25 possible points).

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1. Major/Program Student Learning Outcomes Students will be able to...	2. Phase	3. Assessment Procedures (Planning/ determining)	Criteria: (How do you know students are achieving learning outcome?)
4. Demonstrate understanding the objective of their chemical and biochemical experiments, properly carry out the experiments, and appropriately record and analyze the results.	Planning Planning2+ Not Done	<p>Method: (ex. tests, presentations, research paper) Evaluation of the "results" section of CHEM316 laboratory</p> <p>Using a Sample of Students? Yes</p> <p>If yes, describe your sample. All CHEM 316 students and biochemistry majors separately</p> <p>When does assessment occur? Each weekly lab report results section is assessed with a rubric.</p> <p>How often does assessment occur? Data are collected and results are analyzed every fourth year. (last S12)</p>	At least 80% of students meet or exceed standards in CHEM 316 (a score of >15 out of 25 possible points).
1. Major/Program Student Learning Outcomes Students will be able to...	2. Phase	3. Assessment Procedures (Planning/ determining)	Criteria: (How do you know students are achieving learning outcome?)
5. Employ modern library search tools to locate and retrieve scientific information about a topic, chemical, chemical/biochemical technique, or an issue relating to chemistry or biochemistry	Planning Planning2+ Not Done	<p>Method: (ex. tests, presentations, research paper) Literature Project using SciFinder Scholar</p> <p>Using a Sample of Students? Yes</p> <p>If yes, describe your sample. All CHEM 220 students and biochemistry majors separately</p> <p>When does assessment occur?</p>	At least 80% of students meet or exceed standards (a score of >24 out of 30 possible points)

		<p>Each spring semester.</p> <p>How often does assessment occur? Data are collected and results are analyzed every fourth year. (last S14)</p>	
1. Major/Program Student Learning Outcomes Students will be able to...	2. Phase	3. Assessment Procedures (Planning/ determining)	Criteria: (How do you know students are achieving learning outcome?)
6. Know and follow the proper procedures and regulations for safe handling and use of chemicals	<p>Planning</p> <p>Planning2+</p> <p>Not Done</p>	<p>Method: (ex. tests, presentations, research paper) The safety quiz results in CHEM 210 will be evaluated.</p> <p>Using a Sample of Students? Yes</p> <p>If yes, describe your sample. All CHEM 210 students and biochemistry majors separately</p> <p>When does assessment occur? Quizzes are given each week as part of the laboratory portion of CHEM 210</p> <p>How often does assessment occur? Data are collected and results a</p>	<p>At least 75% of students will meet or exceed standards of scoring 85% on safety quiz. ( score of 13 of 15 pts)</p> <p>Note: that this assessment procedure could not be evaluated as written since the quiz format changed to allow 5 attempts at getting a perfect score.</p>
1. Major/Program Student Learning Outcomes Students will be able to...	2. Phase	3. Assessment Procedures (Planning/ determining)	Criteria: (How do you know students are achieving learning outcome?)
7. Interpret and effectively communicate the concepts found within biochemistry literature as well as the results of their laboratory experiments/research with clarity and coherence through effective writing and oral skills.	Collecting	<p>Method: (ex. tests, presentations, research paper) Student presentations at the "Academic Celebration" will be evaluated by faculty from the department and the instructors i</p>	50% of graduating seniors will have either given a presentation or coauthored a peer-reviewed publication

Using a Sample of Students?

Yes

If yes, describe your sample.

All CHEM 426 students and biochemistry majors separately

When does assessment occur?

End of spring semester.

How often does assessment occur?

Data are collected and results are analyzed every fourth year.  
(last S15)

#### **4. Assessment Results**

(Collecting/ analyzing)

Of the 18 graduating Chemistry and Biochemistry majors, all 18 presented at least one poster at the Academic Celebration. The majority of these students also presented their posters in the School of Science Academic Celebration, which followed later in the afternoon. Nine students presented posters at the American Chemical Society's Eastern New York's section Undergraduate Research Symposium hosted at Siena College by the Department of Chemistry and Biochemistry. In addition, 6 students presented posters at National ACS conferences.

#### **Learning Outcome Met?**

(Based on Criteria)

Yes