

Course Assessment Report
Washtenaw Community College

Discipline	Course Number	Title
Biology	215	BIO 215 08/23/2021-Cell and Molecular Biology
College	Division	Department
	Math, Science and Engineering Tech	Life Sciences
Faculty Preparer		Brad Metz
Date of Last Filed Assessment Report		11/01/2017

I. Review previous assessment reports submitted for this course and provide the following information.

1. Was this course previously assessed and if so, when?

Yes

This course was previously assessed on 8/20/17.

2. Briefly describe the results of previous assessment report(s).

In the previous assessment report, all outcomes met the standard of success. Two of the outcomes were lower, though well above the standard, with the lowest being biological chemistry.

3. Briefly describe the Action Plan/Intended Changes from the previous report(s), when and how changes were implemented.

From the previous report, an assignment for each of the two lowest performing outcomes was to be added. For Winter of 2021, I focused on the lowest performing outcome, biological chemistry. In previous semesters (and this one), I give a PowerPoint lecture on the biological molecules, with side notes and additional information on the dry erase board. Instead of an assignment, as a class (Zoom) we made a simple chart. The chart consisted of the names of the biological molecules, the monomers that make them up and functions of each one. From this chart, students could add detail from their notes and have a majority of biological chemistry in a one page chart.

II. Assessment Results per Student Learning Outcome

Outcome 1: Identify basic biological concepts in biochemistry.

- Assessment Plan
 - Assessment Tool: Written questions on the unit exam
 - Assessment Date: Fall 2020
 - Course section(s)/other population: All
 - Number students to be assessed: All
 - How the assessment will be scored: Answer key and rubric
 - Standard of success to be used for this assessment: 75% of students will score 75% or higher
 - Who will score and analyze the data: Departmental faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2021	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
11	11

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students were assessed.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

There is only one section of BIO 215, it is a day class and this semester it was a virtual classroom.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

To assess this outcome, there were true/false, multiple-choice and short answer questions on the exam. The true/false and multiple-choice were scored as being either correct or incorrect. For the short answer questions, a four-level rubric was used. 0=not attempted, 1=attempted with little or no detail, 2=attempted with a moderate amount of detail and 3=attempted with full and complete detail.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: <u>Yes</u>
All of the students met the standard of success, and the overall average for the questions assessed was 88%.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

This is typically the tougher section for biology students in general. The success on the questions assessed was 5% higher than the previous assessment. Since this was a virtual class it is hard to say exactly why. The difference between this assessment (virtual) and the previous assessment (on campus) was a little over 2%.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

Since all students met the standard of success, and there was a potential increase in overall percent, I plan to continue making the biological molecules chart with the class as a post lecture exercise.
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Outcome 2: Describe the characteristics of the three domains.

- Assessment Plan
 - Assessment Tool: Written questions on the unit exam
 - Assessment Date: Fall 2020
 - Course section(s)/other population: All
 - Number students to be assessed: All
 - How the assessment will be scored: Answer key and rubric
 - Standard of success to be used for this assessment: 75% of students will score 75% or higher
 - Who will score and analyze the data: Departmental faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
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	2021	
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2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
11	11

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students were assessed.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

There is only one section of BIO 215, it is a day class and this semester it was virtual classroom.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

To assess this outcome there were true/false, multiple choice and short answer questions on the exam. The true/false and multiple choice were scored as being either correct or incorrect. For the short answer questions, a four-level rubric was used. 0=not attempted, 1=attempted with little or no detail, 2=attempted with a moderate amount of detail and 3=attempted with full and complete detail.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes
 All of the students met the standard of success and the overall average for the questions assessed was 96%. Understanding of the similarities and differences between the three Domains is evident.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

This outcome was the highest at 96%. This outcome was also one of the two highest from the previous assessment. Upper level classes always seem to do quite well in the area of Domains and Kingdoms.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

Continuous improvement in this area is always possible as new species and new information are always being discovered and reported. A website called ScienceDaily is a resource shared with students. They report on upcoming publications across all fields of science and explain their importance in everyday terms.

Outcome 3: Explain the major biological pathways.

- Assessment Plan
 - Assessment Tool: Written questions on the unit exam
 - Assessment Date: Fall 2020
 - Course section(s)/other population: All
 - Number students to be assessed: All
 - How the assessment will be scored: Answer key and rubric
 - Standard of success to be used for this assessment: 75% of students will score 75% or higher
 - Who will score and analyze the data: Departmental faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2021	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
11	11

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students were assessed.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

There is only one section of BIO 215, it is a day class and this semester it was virtual classroom.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

To assess this outcome there were true/false, multiple choice and short answer questions on the exam. The true/false and multiple choice were scored as being either correct or incorrect. For the short answer questions, a four-level rubric was used. 0=not attempted, 1=attempted with little or no detail, 2=attempted with a moderate amount of detail and 3=attempted with full and complete detail.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

All of the students met the standard of success and the overall average for the questions assessed was 89%.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

Biological pathways are complex and can be overwhelming. Typically in upper level courses students exceed expectations. In class, we typically start with the overall process in general terms and work toward the details, as students have heard the general terms before.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

Students more than met the standard of success and I feel the method for presenting the material works. Additionally, we also discuss what might happen if one of the parts of the pathway does not work. This is especially of interest in terms of cell division and cancer.

Outcome 4: Identify significant historical events in the development of molecular lab techniques.

- Assessment Plan
 - Assessment Tool: Matching and short answer questions on the unit exam
 - Assessment Date: Fall 2020
 - Course section(s)/other population: All
 - Number students to be assessed: All
 - How the assessment will be scored: Answer key and rubric
 - Standard of success to be used for this assessment: 75% of students will score 75% or higher
 - Who will score and analyze the data: Departmental faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2021	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
11	10

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

One of my students was offered a full-time job during the semester and had to withdrawal.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All current students were assessed.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

To assess this outcome there were true/false, multiple choice and short answer questions on the exam. The true/false and multiple choice were either scored correct or incorrect. For the short answer questions, a four-level rubric was used. 0=not attempted, 1=attempted with little or no detail, 2=attempted with a moderate amount of detail and 3=attempted with full and complete detail.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

All of the students met the standard of success and the overall average for the questions assessed was 92%.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

This outcome was the second lowest in the previous report and jumped up to third in this report and was actually slightly higher than the average of all six current outcomes. This area is tough because current groundbreaking research is discussed in this class and going "back in time" can seem a bit slow.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

All students exceeded the standard of success. This virtual semester we did spend more time discussing research, both new and old, since we were not performing the actual experiments in lab. This potentially helped students retain the information better.

Outcome 5: Perform a variety of molecular lab techniques and explain their significance.

- Assessment Plan
 - Assessment Tool: Short answer questions on the unit exam
 - Assessment Date: Fall 2020
 - Course section(s)/other population: All
 - Number students to be assessed: All
 - How the assessment will be scored: Rubric
 - Standard of success to be used for this assessment: 75% of students will score 75% or higher
 - Who will score and analyze the data: Departmental faculty
- 1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2021	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
11	10

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

One of my students was offered a full-time job during the semester and had to withdrawal.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

There is only one section of BIO 215, it is a day class and this semester it was virtual classroom.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

To assess this outcome there were multiple-choice and short answer questions on the exam. The multiple-choice were scored as being either correct or incorrect. For the short answer questions, a four-level rubric was used. 0=not attempted, 1=attempted with little or no detail, 2=attempted with a moderate amount of detail and 3=attempted with full and complete detail. The outcome assessment was based on the above question types as the students were in a virtual classroom and did not practice/perform molecular lab techniques.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

All of the students met the standard of success and the overall average for the questions assessed was 90%.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

Since we were not performing a variety of lab techniques, we discussed them in great detail. Many of the techniques still being used today tie in with the more recent history from the previous outcome.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

All students met the standard of success, and I know from my students that they can't wait to get back in a lab...me too.

Outcome 6: Present lab research in scientific format.

- Assessment Plan
 - Assessment Tool: Evaluation of written and/or oral presentation in scientific format
 - Assessment Date: Fall 2020
 - Course section(s)/other population: All
 - Number students to be assessed: All
 - How the assessment will be scored: Rubric
 - Standard of success to be used for this assessment: 75% of students will score 75% or higher
 - Who will score and analyze the data: Departmental faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2021	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
11	10

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

One of my students was offered a full-time job during the semester and had to withdraw.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All current students were assessed.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

A written paper of original research was graded using a rubric for scientific papers (see attached).

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

All of the students met the standard of success and the overall average for the scientific paper was 95% This paper was written as a first draft, submitted and revisions could be made before the final draft was due.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

Though the "research" was done at home and the data based on that research provided, students always exceed the standard of success. This was the second highest overall outcome.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

This semester allowed more time to really get into what makes a good scientific paper. At the same time allowing for a first draft before the final paper is due allowed for continued discussion and revision.

III. Course Summary and Intended Changes Based on Assessment Results

1. Based on the previous report's Intended Change(s) identified in Section I above, please discuss how effective the changes were in improving student learning.

For the biological molecules, instead of an assignment, we made a chart on a blank PowerPoint slide (dry erase board). We listed each of them in one column and next to each one named the monomers that made them up and functions of each

one. Once this was done students could go back to their notes and add details. The chart was made after the formal lecture and the next class we discussed details that individuals added. What students ended up with, was a "self-made" study guide. Though all students met the standard of success, outcome 1 in this report is 88% while the old report was at 83% (two different cohorts of students). If we look within cohorts, the previous outcome 1 was 6.5% below the average of all outcomes, while in this report, it is slightly less than 4%. So, potentially an increase in learning/retention using the new "chart" format.

- Describe your overall impression of how this course is meeting the needs of students. Did the assessment process bring to light anything about student achievement of learning outcomes that surprised you?

It appears that this course is meeting the needs of students based on the data and information collected. The above mentioned "chart" results did surprise me but what really surprised me was the overall averages of both outcomes was fairly similar between face-to-face and the virtual format.

- Describe when and how this information, including the action plan, was or will be shared with Departmental Faculty.

I plan on sharing this information with fellow faculty at our faculty meeting and at the same time talk about how others add interest to historical researchers and biological molecules and share my "chart" idea with them and ask for feedback.

- Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Course Materials (e.g. textbooks, handouts, on-line ancillaries)	<p>Outcome 1: Continue making the biological molecules chart with the class as a post-lecture exercise.</p> <p>Outcome 2: Continue to share resources with students that keep them up-to-date on current science publications.</p>	<p>These were all effective materials and activities implemented and/or emphasized during the semester assessed in this report. Continuing to implement these will support continuous improvement in student learning.</p>	2021

	<p>Outcome 4: Continue to build in time to discuss research to help students retain information.</p> <p>Outcome 6: Continue allowing students to submit a first draft to allow for revisions before the final draft.</p>		
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5. Is there anything that you would like to mention that was not already captured?

This was the first fully virtual version of this class. As it runs once a year, the previous semester was the "shut down" semester. I feel this data should stay separate from other classes that were fully F2F until more data could be added to virtual BIO 215. This to me is similar to data I compiled from traditional 15 week semesters (fall and winter), and 7.5 week and 6 week summer semesters for BIO 101.

III. Attached Files

[TF multiple choice short answer](#)

[Paper Rubric](#)

[Data Summary](#)

Faculty/Preparer: Brad Metz **Date:** 08/23/2021

Department Chair: Anne Heise **Date:** 08/24/2021

Dean: Victor Vega **Date:** 08/26/2021

Assessment Committee Chair: Shawn Deron **Date:** 12/03/2021

Course Assessment Report
Washtenaw Community College

Discipline	Course Number	Title
Biology	215	BIO 215 08/20/2017-Cell and Molecular Biology
Division	Department	Faculty Preparer
Math, Science and Engineering Tech	Life Sciences	Brad Metz
Date of Last Filed Assessment Report		

I. Assessment Results per Student Learning Outcome

Outcome 1: Identify basic biological concepts in biochemistry.

- Assessment Plan
 - Assessment Tool: Written questions on the unit exam.
 - Assessment Date: Fall 2010
 - Course section(s)/other population: All
 - Number students to be assessed: All
 - How the assessment will be scored:
 - Standard of success to be used for this assessment:
 - Who will score and analyze the data:

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2016	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
15	15

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students were assessed.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

There is only one section of BIO 215 and it is a day class on campus.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

To assess this outcome there were true/false, multiple choice and short answer questions on the exam. The true/false and multiple choice were either scored correct or incorrect. For the short answer questions, a four-level rubric was used. 0=not attempted, 1=attempted with little or no detail, 2=attempted with a moderate amount of detail and 3=attempted with full and complete detail.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

The overall average for the questions assessed in this section was 83%. By far, this was the hardest outcome for "biology" students.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

Although the threshold of success was met, this one was the lowest at 83%. It is clear that the biological side of chemistry still needs some work.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

To continue improvement, extra take-home assignments will be given for added strength and improvement to lecture and lab materials and topics.

Outcome 2: Describe the characteristics of the three domains.

- Assessment Plan
 - Assessment Tool: Written questions on the unit exam.
 - Assessment Date: Fall 2010
 - Course section(s)/other population: All

- Number students to be assessed: All
- How the assessment will be scored:
- Standard of success to be used for this assessment:
- Who will score and analyze the data:

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2016	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
15	15

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students were assessed.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

There is only one section of BIO 215 and it is a day class on campus.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

To assess this outcome there were true/false, multiple choice and short answer questions on the exam. The true/false and multiple choice were either scored correct or incorrect. For the short answer questions, a four-level rubric was used. 0=not attempted, 1=attempted with little or no detail, 2=attempted with a moderate amount of detail and 3=attempted with full and complete detail.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

For the questions assessed in this outcome, the average overall score was a 93%. Describing, comparing and contrasting and understanding of the three domains was clearly evident.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

This was one of the two highest outcomes at 93%. This area seems to be a strong area for biology students in an advanced class, who have met the prerequisites for the class.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

I plan on adding new material to reinforce the Domain Archaea, as it is relatively new and new information is always coming out about this group.

Outcome 3: Explain the major biological pathways.

- Assessment Plan
 - Assessment Tool: Written questions on the unit exam.
 - Assessment Date: Fall 2010
 - Course section(s)/other population: All
 - Number students to be assessed: All
 - How the assessment will be scored:
 - Standard of success to be used for this assessment:
 - Who will score and analyze the data:

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2016	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
15	15

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students were assessed.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

There is only one section of BIO 215 and it is a day class on campus.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

To assess this outcome there were true/false, multiple choice and short answer questions on the exam. The true/false and multiple choice were either scored correct or incorrect. For the short answer questions, a four-level rubric was used. 0=not attempted, 1=attempted with little or no detail, 2=attempted with a moderate amount of detail and 3=attempted with full and complete detail.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

Of the questions assessed for this outcome, the average was a 90% and exceeded the standard of success for the outcome.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

This was one of the highest outcomes at 90%. This area seems to be a strong area for biology students in an advanced class, who have met the prerequisites for the class.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

We spend a lot of time on key pathways in biology and apply them to current events and topics. I plan to continue to add new material as it becomes available.

Outcome 4: Identify significant events in the development of molecular lab techniques.

- Assessment Plan
 - Assessment Tool: Matching and short answer questions on the unit exam.
 - Assessment Date: Fall 2010
 - Course section(s)/other population: All
 - Number students to be assessed: All
 - How the assessment will be scored:
 - Standard of success to be used for this assessment:
 - Who will score and analyze the data:

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2016	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
15	15

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students were assessed.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

There is only one section of BIO 215 and it is a day class on campus.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

To assess this outcome there were matching and short answer questions on the exam. The matching was either scored correct or incorrect. For the short answer questions, a four-level rubric was used. 0=not attempted, 1=attempted with little or no detail, 2=attempted with a moderate amount of detail and 3=attempted with full and complete detail.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

The average for the questions assessed for this outcome was an 86%. This was lower than the other outcomes, because, I feel, the matching section of researchers and their work was a lot to memorize along with the molecular techniques discussed in class, which were also expanded upon in lab.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

This was one of the two lowest outcomes at 86%, besides biological chemistry. This area seems to be a challenge for biology students when similar, more current information is presented and applied in lab in the same section.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

Although it fits well with the current information, I may present it separately in lab and make it a historical molecular quiz instead of part of a unit exam.

Outcome 5: Perform a variety of molecular lab techniques and explain their significance.

- Assessment Plan
 - Assessment Tool: Written questions on the unit exams.
 - Assessment Date: Fall 2010
 - Course section(s)/other population: All
 - Number students to be assessed: All
 - How the assessment will be scored:
 - Standard of success to be used for this assessment:
 - Who will score and analyze the data:

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2016	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
15	15

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students were assessed.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

There is only one section of BIO 215 and it is a day class on campus.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

Students were observed performing and describing a variety of laboratory techniques throughout the semester, as with short answer questions, a four-level rubric was used. 0=not attempted, 1= attempted with little or no detail, 2= attempted with a moderate amount of detail and 3= attempted with full and complete detail.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes
All students averaged a 93% overall for all techniques performed/described. This included:
using the microscope
using a micropipet
using a spectrophotometer
pouring, loading and running a DNA gel for electrophoresis.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

This was one of the two highest outcomes at 93%. This area seems to be a strong area for biology students in an advanced class, who have met the prerequisites for the class. Additionally, before any equipment is used in lab, proper use and skills are covered extensively.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

I think this outcome is one of the highest because it is hands-on and applies to current ongoing research in the field. I don't see any need for changes to this section.

Outcome 6: Present lab research in scientific format.

- Assessment Plan
 - Assessment Tool: Evaluate written and/or oral presentation in scientific format.
 - Assessment Date: Fall 2010
 - Course section(s)/other population: All
 - Number students to be assessed: All
 - How the assessment will be scored:
 - Standard of success to be used for this assessment:
 - Who will score and analyze the data:

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2016	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
15	15

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students were assessed.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

There is only one section of BIO 215 and it is a day class on campus.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

A written paper of original research was graded using a rubric for scientific papers (see attached).

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

The scientific investigation runs for the last 1/3 of the semester. The students write up their findings in scientific format, have one proofreading, and the following week the paper is due. All students achieved the minimum standard of success and the average score on the papers was 92%.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

This was the third highest outcome at 92%. The papers were also proofread, which allowed for revisions before the final copies were handed in.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

I will continue to proofread and allow revisions to this self-directed research paper.

II. Course Summary and Action Plans Based on Assessment Results

1. Describe your overall impression of how this course is meeting the needs of students. Did the assessment process bring to light anything about student achievement of learning outcomes that surprised you?

This course is more than meeting the needs of students based on the information/data collected. The surprise to me was that not every student is as

excited as I am about the research that got us to where we are today. More work needs to be put on this topic.

2. Describe when and how this information, including the action plan, was or will be shared with Departmental Faculty.

Since I am the only instructor of this single section, once-a-year class, I plan on using this information in the areas highlighted in the "Analysis by Outcome" section.

3. Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Course Assignments	Two assignments will be added, one for biological chemistry and the other for historical researchers and their work.	To increase the two lowest outcomes (1 and 4).	2018

4. Is there anything that you would like to mention that was not already captured?

5.

III. Attached Files

[Scientific Paper Rubric](#)
[short answer rubric](#)

Faculty/Preparer: Brad Metz **Date:** 08/21/2017
Department Chair: Anne Heise **Date:** 08/22/2017
Dean: Kristin Good **Date:** 08/24/2017
Assessment Committee Chair: Michelle Garey **Date:** 10/30/2017