

**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.
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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)
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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