

Course Assessment Report  
Washtenaw Community College

Discipline	Course Number	Title
Biology	162	BIO 162 08/19/2019- General Biology II Cells and Molecules
Division	Department	Faculty Preparer
Math, Science and Engineering Tech	Life Sciences	Brad Metz
Date of Last Filed Assessment Report		

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

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

No

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

3.

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

5.

**II. Assessment Results per Student Learning Outcome**

Outcome 1: Describe and identify the macromolecules of life and the structure and function of cells; recognize how cells harvest and harness energy in cellular respiration and photosynthesis.

- Assessment Plan
  - Assessment Tool: Departmental Exams
  - Assessment Date: Fall 2016
  - Course section(s)/other population: All sections
  - Number students to be assessed: All students taking the course (up to 24)

- How the assessment will be scored: Item analysis of selected exam questions. Any essay and/or short answer questions will be scored using a departmentally-developed rubric.
- Standard of success to be used for this assessment: Seventy percent of students will score an overall average score of 70% or better on each assessment question.
- Who will score and analyze the data: Appropriate life science faculty will assess the data after student names have been removed or blacked out.

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)
2018	2019	

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

# of students enrolled	# of students assessed
98	95

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.

Due to withdrawal or absence, the number of students assessed is less than the total enrollment.

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.

Biology 162 is a daytime face-to-face class. All students present on the day of the assessment were assessed.

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

This outcome was assessed using eight questions from the unit exam. Seven questions were short answer, and one was matching (cell structure/function). The seven short answer questions were standardized out of 10 points and scored accordingly. The matching consisted of 13 structures matched to their function, and percent correct was calculated.

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 this outcome, 84% of the students scored 70% or higher on each question and met the standard of success. The highest student success (89%) was found in the questions about the structure and function of cells, while the lowest student success (76%) was found in the questions about the process of photosynthesis and cellular respiration.

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

In this outcome, student strengths were specifically in the areas of biological macromolecules, cell structure and function, the Theory of Endosymbiosis, and other forms of photosynthesis and fermentation.

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.

Though the students met the standard of success, the pathway-specific questions of photosynthesis and cellular respiration could be improved.

Outcome 2: Describe and identify key components of mitosis, meiosis, genetics, gene expression, development, ecology, evolution and sustainability issues.

- Assessment Plan
  - Assessment Tool: Departmental Exams
  - Assessment Date: Fall 2016
  - Course section(s)/other population: All sections
  - Number students to be assessed: All students taking the course (up to 24)
  - How the assessment will be scored: Item analysis of selected exam questions. Any essay and/or short answer questions will be scored using a departmentally-developed rubric.
  - Standard of success to be used for this assessment: Seventy percent of students will score an overall average score of 70% or better on each assessment question.
  - Who will score and analyze the data: Appropriate life science faculty will assess the data after student names have been removed or blacked out.

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)
2018	2019	

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

# of students enrolled	# of students assessed
98	90

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.

Due to withdrawal or absence, the number of students assessed is less than the total enrollment.

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.

Biology 162 is a daytime face-to-face class. All students present on the day of the assessment were assessed.

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

This outcome was assessed using 10 questions from the unit exams. Nine questions were short answer, and one was matching (historical researchers/experiments). The nine short answer questions were standardized out of 10 points and scored accordingly. The matching consisted of 12 researchers matched to their experiments, and percent correct was calculated.

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: No

Overall (10 questions), 80% of the students scored 70% or greater on all but one question (matching), which fell below the threshold at 68%. The highest student success was in the ecology, evolution and sustainability questions (86%).

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

In this outcome, student strengths were specifically in the areas of mitosis, evolution and sustainability.

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.

Nine of the ten questions met the standard of success. The one that did not was matching the researcher with their experiments. This has always been a trouble spot for students. On future exams, I plan to add the date the research was done on the test and spend more time on the importance of these discoveries.

Outcome 3: Perform lab work to elucidate biological concepts and to develop scientific skills including designing, completing and interpreting a scientific experiment.

- Assessment Plan
  - Assessment Tool: Departmental lab exams
  - Assessment Date: Fall 2016
  - Course section(s)/other population: All sections
  - Number students to be assessed: All students taking the course (up to 24)
  - How the assessment will be scored: Item analysis of selected exam questions. Any essay and/or short answer questions will be scored using a departmentally-developed rubric.
  - Standard of success to be used for this assessment: Seventy percent of students will score an overall average score of 70% or better on each assessment question.
  - Who will score and analyze the data: Appropriate life science faculty will assess the data after student names have been removed or blacked out.

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)
2018	2019	

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

# of students enrolled	# of students assessed
98	90

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.

Due to withdrawal or absence, the number of students assessed is less than the total enrollment.

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.

Biology 162 is a daytime face-to-face class. All students present on the day of the assessment were assessed.

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

The outcome was assessed using 10 multiple choice questions from two lab exams and scored accordingly.

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

Overall, 81% of the students scored 70% or higher on each question. The lowest average percentage (74%) showed up in questions regarding data and graph analysis, while the highest (91%) showed up in questions regarding sustainability issues and solutions.

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

In this outcome, student strengths were specifically in the areas of identifying and understanding sustainability issues.

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.

Though the students met the standard of success, data and graph analysis could be improved.

Outcome 4: Demonstrate college-level scientific writing skills.

- Assessment Plan

- Assessment Tool: The final draft of one of the two formal lab reports
- Assessment Date: Fall 2016
- Course section(s)/other population: all sections
- Number students to be assessed: All students taking the course (up to 24)
- How the assessment will be scored: Departmentally-developed rubric
- Standard of success to be used for this assessment: 70% of the students will score 70% or higher
- Who will score and analyze the data: Appropriate life science faculty will assess the data after student names have been removed or blacked out.

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)
2018	2019	

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

# of students enrolled	# of students assessed
98	90

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.

Due to withdrawal or absence, the number of students assessed is less than the total enrollment.

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.

Biology 162 is a daytime face-to-face class. All students present on the day of the assessment were assessed.

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

The lab papers were graded using a departmentally-developed rubric with points identified for each section of a scientific paper.

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 this outcome, 97% of the students scored 70 percent or higher and met the standard of success. Before handing in the final draft, students either had to take the paper to the writing center or email a draft to their instructor for revisions.

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

In this outcome, almost every student met the standard of success. Having students write two papers during the semester definitely strengthened their scientific writing skills.

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.

Almost every student met the standard of success. Those who fell short either handed it in late/incomplete or did not have it peer-reviewed before handing it in.

### **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.

This is the first assessment for BIO 162.

2. 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?

As a whole, this course is meeting the needs of students moving forward in the field of Biology. Even with having students hand in lab papers for peer review, it still surprised me how high the level of success was with scientific paper writing.

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

The information will be shared with faculty at our department meetings. As I am the only lecture instructor for this course, I plan on asking others how to improve the lecture content about past researchers and their impact on the field of Biology.

4.

Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Other: Lecture content	Spending more time in class emphasizing the importance of historical research.	This is the one area that did not meet the standard of success and has also been a challenge in another class (BIO 215).	2019

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

6.
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### III. Attached Files

[Paper Rubric](#)  
[Data Summary](#)

**Faculty/Preparer:** Brad Metz **Date:** 08/19/2019  
**Department Chair:** Anne Heise **Date:** 08/20/2019  
**Dean:** Victor Vega **Date:** 09/09/2019  
**Assessment Committee Chair:** Shawn Deron **Date:** 01/09/2020