

**Course Assessment Report
Washtenaw Community College**

| Discipline | Course Number | Title |
|--------------------------------------|---------------------------------------|--|
| Biology | 101 | BIO 101 08/17/2023- Concepts of Biology |
| College | Division | Department |
| | Math, Science and Engineering Tech | Life Sciences |
| Faculty Preparer | | Brad Metz |
| Date of Last Filed Assessment Report | | 01/30/2018 |

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

Winter 2017

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

Over all 3 outcomes were assessed. All outcomes met the standard of success of 75%.

1 = 78.6

2 = 75.8

3 = 80.2

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

The idea was to share the questions with all instructors to make sure the master syllabus is being covered, and spend more time on specific areas where individual questions fell below the standard.

II. Assessment Results per Student Learning Outcome

Outcome 1: Recognize the fundamental structures and functions of biological systems.

- Assessment Plan

- Assessment Tool: Five common exam questions
- Assessment Date: Fall 2021
- Course section(s)/other population: All
- Number students to be assessed: All students
- How the assessment will be scored: Answer key and rubric
- Standard of success to be used for this assessment: 75% of the students will score 75% or higher
- Who will score and analyze the data: Department 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) |
|-----------------------------|-------------------------------|------------------------------|
| | 2023 | |

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

| # of students enrolled | # of students assessed |
|------------------------|------------------------|
| 242 | 198 |

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 absence and withdrawal the entire populations was not 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.

Five questions were added to the common final exam and scored separately via scantron.

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 five additional questions on the common final.

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, the standard of success was met at 79% This was the second highest average and shows students have a grasp on structures and functions in biological systems.

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

Of the five questions, one question in particular brought the overall average down. In total, the students did quite well in this outcome. If the one question is removed, the average would have been 84%.

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.

Moving forward, we will focus on question 4, which had an average of 56%, and place more emphasis on the fact that living things can be unicellular or multicellular. This same type of confusion shows up in the Kingdom Protista, which has both uni and multicellular representatives.

Outcome 2: Identify key aspects of cell metabolism, photosynthesis, genetics, and reproduction.

- Assessment Plan
 - Assessment Tool: Five common exam questions
 - Assessment Date: Fall 2021
 - Course section(s)/other population: All
 - Number students to be assessed: All students
 - How the assessment will be scored: Answer key and rubric
 - Standard of success to be used for this assessment: 75% of the students will score 75% or higher
 - Who will score and analyze the data: Department 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) |
|-----------------------------|-------------------------------|------------------------------|
| | 2023 | |

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

| # of students enrolled | # of students assessed |
|------------------------|------------------------|
| 242 | 198 |

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 absence and withdrawal the entire populations was not 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.

Five Questions were added to the common final exam and scored separately via scantron.

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 five additional questions on the common final.

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, the standard of success was met at 75% This was the lowest average and shows students struggle with the "chemistry" side of biology.

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

Though this outcome barely met the standard of success, one question really brought the average down. Without that question, the average would have been a little over 79%.

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.

Back to that "one question", in this outcome, it was question 3, concerning the definition of a gene. The average for this question was 57%. The gene concept and protein synthesis are two areas that are difficult for students. Possibly including different analogies relating to genes and protein synthesis might help.

Outcome 3: Compare and contrast the evolution and biological characteristics of the six major taxa of living organisms.

- Assessment Plan
 - Assessment Tool: Five common exam questions
 - Assessment Date: Fall 2021
 - Course section(s)/other population: All
 - Number students to be assessed: All students
 - How the assessment will be scored: Answer key and rubric
 - Standard of success to be used for this assessment: 75% of the students will score 75% or higher
 - Who will score and analyze the data: Department 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) |
|-----------------------------|-------------------------------|------------------------------|
| | | |

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

| # of students enrolled | # of students assessed |
|------------------------|------------------------|
| | 0 |

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.

This outcome was not assessed this assessment.

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.

This outcome was not assessed this assessment.

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

This outcome was not assessed this assessment.

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>No</u> |
| This outcome was not assessed this assessment. The questions for this outcome were added to the file to be printed and added to the common final exam, but the assessor (me), sent a pre-saved version without these questions. |

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

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| This outcome was not assessed this assessment. |
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- 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.

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| This outcome was not assessed this assessment. |
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Outcome 4: Identify the principles and mechanisms that regulate and sustain ecological systems.

- Assessment Plan
 - Assessment Tool: Five common exam questions
 - Assessment Date: Fall 2021
 - Course section(s)/other population: All
 - Number students to be assessed: All students
 - How the assessment will be scored: Answer key and rubric
 - Standard of success to be used for this assessment: 75% of the students will score 75% or higher
 - Who will score and analyze the data: Department faculty

- 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) |
|-----------------------------|-------------------------------|------------------------------|
| | 2023 | |

- Provide assessment sample size data in the table below.

| # of students enrolled | # of students assessed |
|------------------------|------------------------|
| 242 | 198 |

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 absence and withdrawal the entire population was not 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.

Five questions were added to the common final exam and scored separately via scantron.

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 five additional questions on the common final.

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, the standard of success was met at 84% This was the highest average and shows students understand ecological systems. This is more "big picture" type biology that most students gravitate toward.

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

This was the highest average (84%) of all the outcomes. Students tend to gravitate more toward "big picture" biology. The sticking point is always the things we can't see (genes and cellular processes).

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.

As previously stated, this material tends to be of interest and a strength for many students.

Outcome 5: Demonstrate the proper use and application of laboratory skills relating to biological investigation.

- Assessment Plan
 - Assessment Tool: Scientific method paper
 - Assessment Date: Fall 2021
 - Course section(s)/other population: All
 - Number students to be assessed: All students
 - How the assessment will be scored: Departmentally-developed rubric
 - Standard of success to be used for this assessment: 75% of the students will score 75% or higher
 - Who will score and analyze the data: Department 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) |
|-----------------------------|-------------------------------|------------------------------|
| | 2023 | |

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

| # of students enrolled | # of students assessed |
|------------------------|------------------------|
| 242 | 198 |

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 absence and withdrawal the entire population was not 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.

Instructors were asked to return the written assignment for this assessment.

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

The average scores from each section were tallied and averaged to see if the standard of success was met.

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, the standard of success was met at 76%. Scientific writing is not always easy, it's a different style of writing altogether. We do have a requirement that student take their paper to the writing center for review prior to handing it in. This portion is worth 5 points, or roughly 16% of the grade.

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

Scientific writing is not easy, and I was surprised it was not the lowest outcome, though second lowest by 1%.

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.

Spending more lab time discussing scientific writing and possibly analyzing two scientific papers would help this outcome.

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.

Since all of the outcomes met the standard, any changes may have helped, although the lowest outcomes seem consistent among assessments.

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?

Overall this course seems to be meeting the needs of students and they are reaching their goals. Not overly surprising, but in all outcomes one or two questions of the five dramatically lowered that outcomes average and is something I intend to add to the action plan.

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

This information will be shared at the first department meeting this fall.

4.

Intended Change(s)

| Intended Change | Description of the change | Rationale | Implementation Date |
|-----------------|--|--|---------------------|
| Assessment Tool | <p>I plan on making outcome 1-4, on the final lab exam, 10 questions instead of 5. The scientific lab paper will still be used for outcome 5.</p> <p>I also plan on making the standard 70% or higher.</p> | <p>Knowing that the average can be significantly impacted by one number, as was seen in many outcomes, making the assessment out of 10 questions will give a better indication of the assessed population. I will be writing additional questions, to be approved by the department and performing a trial run of these with my two lab sections this fall. While two sections is a small sample size, it represents approximately 25% of the assessed population from this assessment (assuming full enrollment).</p> | 2023 |
| Other: Data | <p>Student-by-student data will be submitted with the next report.</p> | <p>I no longer have access to the granular data for this report, but per Committee suggestion I plan to submit student-by-student data with the next assessment report.</p> | 2024 |

| | | | |
|------------------|---|--|------|
| Other: Outcome 3 | Outcome 3 was left out this time, but will be included in the next assessment report. | It was necessary to remove Outcome 3 this time, but I will be making plans now to ensure it is included in the next assessment report. | 2024 |
|------------------|---|--|------|

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

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|----|
| 6. |
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III. Attached Files

[Assessment Data](#)

Faculty/Preparer: Brad Metz **Date:** 08/18/2023
Department Chair: Susan Dentel **Date:** 08/22/2023
Dean: Tracy Schwab **Date:** 08/28/2023
Assessment Committee Chair: Jessica Hale **Date:** 01/13/2025

**Course Assessment Report
Washtenaw Community College**

| Discipline | Course Number | Title |
|---------------------------------------|---------------|--|
| Biology | 101 | BIO 101 11/21/2017- Concepts of Biology |
| Division | Department | Faculty Preparer |
| Math, Science and Engineering Tech | Life Sciences | Ross Strayer |
| Date of Last Filed Assessment Report | | |

I. Assessment Results per Student Learning Outcome

Outcome 1: Recognize basic concepts relating to: characteristics of living things, chemistry, cells and cellular energy, genetics, human reproduction, kingdoms, ecology and evolution.

- Assessment Plan
 - Assessment Tool: Five core questions per test will be used throughout all sections and an item analyses will be done on these questions for objectives 1-54.
 - Assessment Date: Winter 2014
 - Course section(s)/other population: all
 - Number students to be assessed: 50-100% (randomly selected)
 - How the assessment will be scored: item analysis of selected unit test questions.
 - Standard of success to be used for this assessment: 75% of answers are correct for each outcome.
 - Who will score and analyze the data: department 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) |
|-----------------------------|-------------------------------|------------------------------|
| | 2017 | |

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

| # of students enrolled | # of students assessed |
|------------------------|------------------------|
| 516 | 348 |

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.

Questions were added to the common final lab exam. Most instructors submitted the scantron data for use in the assessment. Therefore, all students for whom their instructor replied were assessed. If an instructor did not respond to a request for information, their students' data could not be included.

In addition, approximately six (6) students did not answer any questions.

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.

Some sections of BIO 101 are taught in mixed mode but the lab is face-to-face. Therefore, all students in all lab sections answered the common final questions. Data was requested of all section instructors.

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

Five (5) questions embedded in a laboratory exam, using multiple choice format, were used to assess this outcome. Scantron sheets and item analysis were used to collect the data. Questions #4, 5, 6, 8 and 10 were used to assess outcome #1.

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, the average success rate for all five questions was 78.6%. An item analysis was done for each question. The average for two of the five questions was below 75%. They were 61% for question 4 and 74% for question 8. These questions were about characteristics of life and taxonomy for the major groups of living things.

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

Overall the standard of success was met. The strongest performances were for questions about cell structure, chemistry, and ecology. Areas that could use more time or a different approach are the characteristics of life and the major groups of living organisms.

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.

Cell structure, chemistry and ecology were topics that met the success rate goal. The topics of characteristics of living things and the major classification groups are not normally difficult subjects. Perhaps including these topics more often in lecture and lab activities would increase student awareness. Further exposure, such as take-home crossword puzzles, etc. and in-class assignments where the students incorporate these concepts could also help.

Outcome 2: Identify basic processes, theories and principles of chemistry, cells, genetics and cellular energy.

- Assessment Plan
 - Assessment Tool: Five core questions per test will be used throughout all sections and an item analyses will be done on these questions for objectives 1-54.
 - Assessment Date: Winter 2014
 - Course section(s)/other population: all
 - Number students to be assessed: 50-100% (randomly selected)
 - How the assessment will be scored: item analysis of selected unit test questions.
 - Standard of success to be used for this assessment: 75% of answers correct for each outcome.
 - Who will score and analyze the data: department 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) |
|-----------------------------|-------------------------------|------------------------------|
| | 2017 | |

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

| # of students enrolled | # of students assessed |
|------------------------|------------------------|
| 516 | 348 |

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.

Questions were added to the common final lab exam. Most instructors submitted the Scantron data for use in the assessment. Therefore, all students for whom their instructor replied were assessed. If an instructor did not respond to a request for information, their students' data could not be included.

In addition, approximately six (6) students did not answer any questions.

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.

Some sections of BIO 101 are taught in mixed mode but the lab is face-to-face. Therefore, all students in all lab sections answered the common final questions. Data was requested of all section instructors.

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

Five (5) Scantron-gradable questions were given as part of the second laboratory exam. These questions were attached to the end of the exam and were not graded. For each of the five questions, the percent of students answering correctly was tabulated.

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

Questions #1, 2, 3, 7 and 9 were used to assess this outcome. The overall success rate for all five questions was 75.8%. However, questions 1, 2 and 3 were below the 75% success rate standard.

Question 1 = 64%

Question 2 = 71%

Question 3 = 68%

Question 7 = 85%

Question 9 = 91%

Question 1 was about cellular metabolism. Question 2 was about biological energy and question 3 related to the definition of a gene.

Overall, the average of the five questions was 75.8%. However, because three of the questions were below the success rate of 75%, learning for this outcome needs to be addressed.

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

The students did very well with questions regarding chemistry principles and the theory of evolution. As a result, the overall average for outcome #2 was above 75%.

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.

Areas in which student achievement could be improved are general cellular metabolism, cellular structures related to metabolism and genetics (including genetic terminology). These are generally difficult subjects for a first-time biology student. More time spent on these topics is one possibility. More hands-on exercises and basic videos would also help in making these topics more student-friendly.

Outcome 3: Recognize proper use of laboratory equipment.

- Assessment Plan
 - Assessment Tool: Lab exam questions.
 - Assessment Date: Winter 2014
 - Course section(s)/other population: all
 - Number students to be assessed: 50-100% (randomly selected)
 - How the assessment will be scored: item analysis of selected questions.
 - Standard of success to be used for this assessment: 75% of questions correct.
 - Who will score and analyze the data: department 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) |
|-----------------------------|-------------------------------|------------------------------|
| | 2017 | |

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

| # of students enrolled | # of students assessed |
|------------------------|------------------------|
| 516 | 348 |

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.

Questions were added to the common final lab exam. Most instructors submitted the Scantron data for use in the assessment. Therefore, all students for whom their instructor replied were assessed. If an instructor did not respond to a request for information, their students' data could not be included.

In addition, approximately six (6) students did not answer any questions.

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.

Some sections of BIO 101 are taught in mixed mode but the lab is face-to-face. Therefore, all student in all lab sections answered the common final questions. Data was requested of all section instructors.

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

Five Scantron-gradable questions were given at the end of the second laboratory exam. These questions were not graded. For each of the five questions, the percent of students answering correctly was tabulated. Questions 11 - 15 were used to assess outcome #3.

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 of the five questions (questions 11-15) was 80.2%. However, questions 13 and 15 were below the 75% success rate.

Question 11 = 89%

Question 12 = 94%

Question 13 = 68%

Question 14 = 84%

Question 15 = 66%

Overall, the standard of success was met. Students are competent in the use of laboratory equipment, especially as far as the microscope is concerned.

Question 13 (using the microscope) was covered in the laboratory portion of the course, but the wording of the assessment question could have caused some confusion in how to best answer.

Question 15 (using the metric system) is one area in which students seem to be weak. The metric system could be worked into more exercises in the biology laboratory and lecture to remedy this.

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

Overall, students did well on the laboratory portion. Their understanding of microscope use and the scientific method were strong topics.

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.

The metric system seems to be the weak link. Students need more time to actually use the metric system. More assignments involving measuring with the microscope would be helpful. More discussion of the metric system in the lecture portion of the course might strengthen their knowledge.

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?

Introductory biology includes a huge number of topics and many ways to cover these topics. Overall, this course does a good job of introducing the student to the world of living things. The amount of information scientists have learned in the

last 50 years is amazing and vast, and yet, the biology classes of today have exactly the same amount of time to cover relevant material as the biology classes of 50 years ago: 15 weeks, with 45 hours of lecture and 45 hours of lab. It is a true challenge to figure out what to include and what to leave out.

There were some surprises in the outcomes of this assessment. Low scores on characteristics of life and classification were not expected. Students generally seem comfortable with these topics, and they are not among the more difficult to cover. Lower scores on topics such as cellular metabolism and genetics were not as surprising. These are always more difficult subjects and are worthy of constant attention. Every instructor is always trying to come up with new and better ways to present material that is becoming more complex and intricate with each passing year.

One solution would be to share the final exam questions with all instructors. The exam was a surprise for the instructors and the students. Getting everybody on board with what we are trying to do (improve success rates) will definitely help by making sure that the topics are covered in each section.

More "get-togethers" with full- and part-timers, concentrating on teaching techniques and presentations of hard-to-teach subjects. We have a lot of good biology teachers at WCC and we should use their ideas and excitement for teaching as much as possible.

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

Information obtained from this assessment will be sent to all biology instructors at WCC. We can then meet as often as possible (in-service, etc.) to share ideas. Department meetings are an obvious place to discuss what we can do.

- 3.

Intended Change(s)

| Intended Change | Description of the change | Rationale | Implementation Date |
|--------------------|--|--|---------------------|
| Course Assignments | More lecture time spent on areas that scored below 75%. Since these ideas tend to be more difficult to grasp, more time spent talking about them and getting the students to think | Time, and lack of it, is a major concern in general biology courses. There is only so much time, and the amount of information is increasing literally every day. Which ideas are the most | 2018 |

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| | <p>about them may help. Take-home assignments such as crossword puzzles and current news discussions may also help drive these ideas home.</p> <p>Possible ways to incorporate this material into lab will need further discussion and then inclusion into the laboratory manual.</p> | <p>important? How does one decide? How does one then implement these ideas into a class that is already packed with information? We need to constantly keep figuring out what it is we should be teaching and then figuring out ways to get through to a student who is not a biology major.</p> <p>At this time, we need to figure out the best ways to make sure these difficult topics get the coverage they need without overdoing it. We still need the student to like biology. But, we can't neglect the important topics. As for now, figuring out how to spend a little more quality time on the difficult subjects and generating new ways to create and hold interest is something we can do.</p> | |
| <p>Other: Communication with all instructors</p> | <p>Full-time faculty will communicate more frequently with each other and part-time instructors</p> | <p>Because of the amount of material to be covered, we need to make sure that important</p> | <p>2018</p> |

| | | | |
|--|---|----------------------------------|--|
| | to make sure everyone is including the assessment topics in their course. | topics are consistently covered. | |
|--|---|----------------------------------|--|

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

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|----|
| 5. |
|----|

III. Attached Files

[Assessment Questions Explained](#)
[Assessment Questions](#)

Faculty/Preparer: Ross Strayer **Date:** 12/20/2017
Department Chair: Anne Heise **Date:** 12/20/2017
Dean: Kristin Good **Date:** 12/20/2017
Assessment Committee Chair: Michelle Garey **Date:** 01/29/2018

**Course Assessment Report
Washtenaw Community College**

| Discipline | Course Number | Title |
|---------------------------------------|---------------|--|
| Biology | 101 | BIO 101 04/16/2015- Concepts of Biology |
| Division | Department | Faculty Preparer |
| Math, Science and Engineering Tech | Life Sciences | Anne Heise |
| Date of Last Filed Assessment Report | | |

I. Assessment Results per Student Learning Outcome

Outcome 1: Recognize basic concepts relating to: characteristics of living things, chemistry, cells and cellular energy, genetics, human reproduction, kingdoms, ecology and evolution.

- Assessment Plan
 - Assessment Tool: Five core questions per test will be used throughout all sections and an item analyses will be done on these questions for objectives 1-54.
 - Assessment Date: Winter 2012
 - Course section(s)/other population: all
 - Number students to be assessed: 50-100% (randomly selected)
 - How the assessment will be scored: item analysis of selected unit test questions.
 - Standard of success to be used for this assessment: 75% of answers are correct for each outcome.
 - Who will score and analyze the data: department 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) |
|-----------------------------|-------------------------------|------------------------------|
| 2012 | | |

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

| # of students enrolled | # of students assessed |
|------------------------|------------------------|
| 692 | 538 |

- 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.

Absence accounts for most of the missing students. Two were excluded from the analysis, one because the scantron was wrinkly and did not go through the scantron reader. The other was excluded because the student was judged by the instructor to be deliberately attempting to answer every question wrong. He got only 1 question right and at the same time the assessment was given got a B on a graded lab exam.

- 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 sections of 101 were included. Our 101 MM meets on campus for lab, and the assessment was given in lab.

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

Seven scantron-gradable questions were given as part of a non-graded test. The test was given at the same time as the second lab exam for BIO 101. For each of the seven questions, the percent of students answering correctly was tabulated.

- 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> | |
|-------------------------------------|-----------------------|
| Question | % answering correctly |
| 2 | 82 |
| 5 | 81 |
| 6 | 81 |
| 7 | 88 |
| 8 | 78 |
| 9 | 90 |
| 10 | 88 |

The standard of success **WAS** met for these questions. These questions emphasized factual recall.

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

The standard of success was met for this outcome overall and for each question used in the assessment. Strongest performance was for questions about ecology, evolution, and the chemistry of cells.

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.

The standard of success was met for this outcome overall and for each question used in the assessment. Weakest performance (while still meeting the standard of success) was in questions about biological diversity and cellular structures such as the chloroplast or cell membrane. These are both topics that are probably new to a student of biology because they are seldom in the news or in everyday conversation.

Outcome 2: Identify basic processes, theories and principles of chemistry, cells, genetics and cellular energy.

- Assessment Plan
 - Assessment Tool: Five core questions per test will be used throughout all sections and an item analyses will be done on these questions for objectives 1-54.
 - Assessment Date: Winter 2012
 - Course section(s)/other population: all
 - Number students to be assessed: 50-100% (randomly selected)
 - How the assessment will be scored: item analysis of selected unit test questions.
 - Standard of success to be used for this assessment: 75% of answers correct for each outcome.
 - Who will score and analyze the data: department 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) |
|-----------------------------|-------------------------------|------------------------------|
| 2012 | | |

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

| # of students enrolled | # of students assessed |
|------------------------|------------------------|
| 692 | 538 |

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.

Absence accounts for most of the missing students. Two were excluded from the analysis, one because the scantron was wrinkly and did not go through the scantron reader. The other was excluded because the student was judged by the instructor to be deliberately attempting to answer every question wrong. He got only 1 question right and at the same time the assessment was given got a B on a graded lab exam.

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 sections of 101 were included. Our 101 MM meets on campus for lab, and the assessment was given in lab.

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

Three scantron-gradable questions were given in a non-graded test. The test was given at the same time as the second lab exam for BIO 101. For each of the three questions, the percent of students answering correctly was tabulated.

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>No</u> | |
|------------------------------------|-----------------------|
| Question | % answering correctly |
| 1 | 66 |
| 3 | 65 |
| 4 | 62 |

The standard of success was NOT met for questions 1,3, and 4.

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

The standard of success was not met overall for this outcome nor for any of the three questions used to assess this outcome. The percent correct ranged from 62% to 66%, a narrow range. On the bright side, 2/3 of students knew that ATP has a high-energy phosphate bond. This is actually a key phenomenon of life!

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.

These questions are considered more of critical thinking questions. As such, the vocabulary is probably more difficult for students and the concepts are quite new and not part of everyday life. Instructors who are aware of these issues may spend more time discussing them when introducing them in class.

Outcome 3: Recognize proper use of laboratory equipment.

- Assessment Plan
 - Assessment Tool: Lab exam questions.
 - Assessment Date: Winter 2012
 - Course section(s)/other population: all
 - Number students to be assessed: 50-100% (randomly selected)
 - How the assessment will be scored: item analysis of selected questions.
 - Standard of success to be used for this assessment: 75% of questions correct.
 - Who will score and analyze the data: department 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) |
|-----------------------------|-------------------------------|------------------------------|
| 2012 | | |

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

| # of students enrolled | # of students assessed |
|------------------------|------------------------|
| 694 | 0 |

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.

Outcome was not assessed in Fall 2012.

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.

Outcome was not assessed in Fall 2012.

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

Outcome was not assessed in Fall 2012.

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

Outcome was not assessed in Fall 2012.

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

This outcome was not assessed.

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 outcome was not assessed.

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?

The main questions to consider going forward will be the following:

1. Is this tool the best way to assess 101 outcomes? What should be done about assessing Outcome 3 (lab equipment).
2. There is no common final exam for BIO 101, a course with 28 sections in a typical semester. Should we institute one? If not a common final, should we require all instructors to embed some assessment questions either in a final exam or in their unit exams?
3. What can be done to improve our students' performance as critical thinkers?

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

The report will be shared by email with full and part-time faculty as soon as it works its way through the assessment committee.

3. Intended Change(s)

| Intended Change | Description of the change | Rationale | Implementation Date |
|---|--|---|---------------------|
| Other: open a discussion on myriad topics | First of all, the assessment plan filed with the 101 master syllabus was not followed when this assessment was done. That plan would have required a great deal of advance work and coordination with about 20 instructors. The assessment that was done was on a smaller scale and was executed in a single lab period. We need to talk about what is the best thing to do going forward: small and simple (what we did) vs comprehensive and | The rationale is basically what I said above. The assessment that was done was simpler than the assessment proposed in the master syllabus. Simple means we finally got it done, but we got limited information from the assessment. So, as a department, we need to figure out what to do next time. | 2015 |

| | | | |
|--|---|--|--|
| | complicated (what the master syllabus says will be done). | | |
|--|---|--|--|

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

| |
|---|
| <p>The actual work of assessment was carried out by all the full-and part-time faculty who administered the tool. The tool was written by David Wooten. Emily Thompson compiled all the data and did all the computations. Anne Heise put the info into Curricunet.</p> |
|---|

III. Attached Files

[Assessment results](#)

[Assessment tool](#)

Faculty/Preparer: Anne Heise **Date:** 04/20/2015
Department Chair: Anne Heise **Date:** 04/20/2015
Dean: Kristin Good **Date:** 04/29/2015
Assessment Committee Chair: Michelle Garey **Date:** 06/15/2015

COURSE ASSESSMENT REPORT

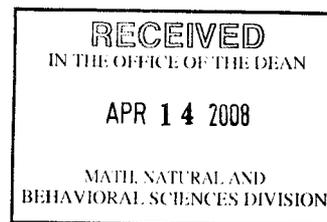
I. Background Information

1. Course assessed:
 Course Discipline Code and Number: BIO 101
 Course Title: Concepts of Biology
 Division/Department Codes: MNBS

2. Semester assessment was conducted (check one):
 Fall 20__
 Winter 2007_
 Spring/Summer 20__

3. Assessment tool(s) used: check all that apply.
 Portfolio
 Standardized test
 Other external certification/licensure exam (specify):
 Survey
 Prompt
 Departmental exam
 Capstone experience (specify):
 Other (specify): Five core questions from each unit exam

4. Have these tools been used before?
 Yes
 No



If yes, have the tools been altered since its last administration? If so, briefly describe changes made.

5. Indicate the number of students assessed/total number of students enrolled in the course.
 45 students enrolled at beginning of semester

6. Describe how students were selected for the assessment.
 All students registered in sections 22/23 that took the exam.

II. Results

1. Briefly describe the changes that were implemented in the course as a result of the previous assessment.
 NA.

2. State each outcome (verbatim) from the master syllabus for the course that was assessed.
 1. Recognize basic concepts relating to: characteristics of living things, chemistry, cells and cellular energy, genetics, human reproduction, kingdoms, ecology, and evolution.
 2. Identify basic processes, theories and principles of chemistry, cells, genetics and cellular energy.
 3. Perform laboratory procedures.

3. Briefly describe assessment results based on data collected during the course assessment, demonstrating the extent to which students are achieving each of the learning outcomes listed above. *Please attach a summary of the data collected.*
 Please see attached data summary. The results show that all outcomes were met at the 70% or above level.

4. For each outcome assessed, indicate the standard of success used, and the percentage of students who achieved that level of success. *Please attach the rubric/scoring guide used for the assessment.*
 Please see the attached data summary.

5. Describe the areas of strength and weakness in students' achievement of the learning outcomes shown in assessment results.

COURSE ASSESSMENT REPORT

Weaknesses: Students performance on Outcome 2 was the lowest.

III. Changes influenced by assessment results

1. If weaknesses were found (see above) or students did not meet expectations, describe the action that will be taken to address these weaknesses.
 More study guides and practice materials have been given to students. Greater stress has been placed on areas that students did not score as well on. Certain test questions have been changed.

2. Identify intended changes that will be instituted based on results of this assessment activity (check all that apply). Please describe changes and give rationale for change.

a. Outcomes/Assessments on the Master Syllabus
 Change/rationale:

b. Objectives/Evaluation on the Master Syllabus
 Change/rationale:

c. Course pre-requisites on the Master Syllabus
 Change/rationale:

d. 1st Day Handouts
 Change/rationale:

e. Course assignments
 Change/rationale:

f. Course materials (check all that apply)

Textbook

Handouts

Other: Tests

More study guides and practice material will be provided for students.
 Tests questions will be revised.

g. Instructional methods
 Change/rationale:

More emphasis will be placed on difficult concepts in Outcome2

h. Individual lessons & activities
 Change/rationale:

3. What is the timeline for implementing these actions? Winter 2008

IV. Future plans

1. Describe the extent to which the assessment tools used were effective in measuring student achievement of learning outcomes for this course.

The assessment results indicated that more emphasis be placed on material related to Outcome 2.

2. If the assessment tools were not effective, describe the changes that will be made for future assessments.

3. Which outcomes from the master syllabus have been addressed in this report?

All X Selected _____

If "All", provide the report date for the next full review: _____

If "Selected", provide the report date for remaining outcomes: W09

Submitted by:

Name: WILLIAM NEVERS William Nevers Date: 4/3/08
 Print/Signature

COURSE ASSESSMENT REPORT

WASHTENAW COMMUNITY COLLEGE

Department Chair: Esta Grossman Date: 4/3/08
Print/Signature

Dean: Martha Showalter M. Showalter Date: APR - 7 2008
Print/Signature