

Course Assessment Report
Washtenaw Community College

Discipline	Course Number	Title
Biology	109	BIO 109 05/22/2017- Essentials of Human Anatomy and Physiology
Division	Department	Faculty Preparer
Math, Science and Engineering Tech	Life Sciences	Susan Dentel
Date of Last Filed Assessment Report		

I. Assessment Results per Student Learning Outcome

Outcome 1: Use correct terminology when referring to the structure and function of the human body at all levels, including molecular, biochemical, cellular, histological and organismal.

- Assessment Plan
 - Assessment Tool: Multiple choice and/or short answer questions on unit exam and/or cumulative final exam
 - Assessment Date: Winter 2016
 - Course section(s)/other population: all
 - Number students to be assessed: all
 - How the assessment will be scored: item analysis
 - Standard of success to be used for this assessment: 70% of students will score at least 70%.
 - 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)
2009	2017	

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

# of students enrolled	# of students assessed
128	67

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.

An average of 67 students completed the exam assessments regarding the knowledge for outcome #1. I utilized the sections that faculty had available for me to do the 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.

Two sections of Bio 109 are normally offered during the fall and winter semesters. This assessment includes data from one section from a fall semester and one section from a winter semester. Both of these sections were regular face to face sections. I combined the old and the new data for this outcome.

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

The first outcome is a relatively general one and is involved in all aspects of the course. I used the questions provided to me that related to this outcome from exams 1 through 5 (from both semesters). Students were assessed on their performance of these questions. Item analysis was performed.

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

65% of the students (21 out of 32) scored more than 70% on the 9 questions for this outcome. The standard for success was not met.

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

Students didn't perform well overall, but did come close to reaching the measurement of success on outcome #1. Bio 109 is almost identical to Bio 111 with the exception that there is a little more coverage in muscular anatomy due to a special emphasis for students in the PTA and radiology programs. In Bio 111, students typically perform about the same as what is seen in this result. From this assessment, it appears that students performed decently with simple terminology questions, but didn't perform as well with higher-level Bloom terminology-based questions.

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.

There are some questions used for outcome #1 in which less than 70% of the students answered the question correctly. Further analysis would be needed in future assessments to determine:

1. If the questions are poorly written. In this case, the solution would be to either discard the questions or rewrite them.
2. If the questions were decent, but perhaps difficult for the students, then adjustment of teaching would be needed. More emphasis in lecture, more practice and class discussion regarding the question topics might be needed.
3. Determine if the questions are truly indicative and relevant to the outcomes.

This data is questionable based on how it was collected and analyzed. In the future, a larger sample size taken over time should be used, the same questions should be used for all student sections as well as the same number of questions assessed per outcome and per student section. In addition, there will be more accurate and specific knowledge regarding the number of students enrolled and assessed. In terms of pedagogy, it seems important that instructors provide students with more practice with critical thinking and higher level question interpretation as well as more emphasis in lecture on these topics and more classroom discussion.

Outcome 2: Identify and explain the importance of homeostasis, and how it depends on events, including gene expression, that occur at the chemical and cellular level.

- Assessment Plan
 - Assessment Tool: Multiple choice and/or short answer questions on unit exam and/or cumulative final exam
 - Assessment Date: Winter 2016
 - Course section(s)/other population: all
 - Number students to be assessed: all
 - How the assessment will be scored: item analysis
 - Standard of success to be used for this assessment: 70% of students will score at least 70%.

- 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)
2009	2017	

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

# of students enrolled	# of students assessed
128	65

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.

An average of 65 students completed the exam assessments regarding the knowledge for outcome #1. I performed this assessment based on data given to me by these particular sections.

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.

Two sections of Bio 109 are normally offered during the fall and winter semesters. This assessment includes data from one section from a fall semester and one section from a winter semester. Both of these sections were regular face to face sections. I combined the old and the new data for this outcome.

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

The second outcome is a relatively general one and is involved in all aspects of the course. I used the questions provided to me that related to this outcome from exams 1 through 5 (from both semesters). Students were assessed on their performance of these questions. Item analysis was performed.

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
 68% of the students (20 out of 30) scored more than 70% on the 11 questions for this outcome. The standard for success was not met.

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

Students didn't perform well overall, but did come close to reaching the measurement of success on outcome #2. Bio 109 is almost identical to Bio 111 with the exception that there is a little more coverage in muscular anatomy due to a special emphasis for students in the PTA and radiology programs. In Bio 111, students typically perform about the same or better on this outcome. From this assessment, it appears that students had a fairly decent understanding of homeostasis, but perhaps struggled with higher level questions that involved multiple steps in mentally coming up with an answer or perhaps misunderstood the language used in the question.

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.

There are some questions used for outcome #2 in which less than 70% of the students answered the question correctly. Further analysis would be needed in future assessments to determine:

1. If the questions are poorly written. In this case, the solution would be to either discard the questions or rewrite them.
2. If the questions were decent, but perhaps difficult for the students, then adjustment of teaching would be needed. More emphasis in lecture, more practice and class discussion regarding the question topics might be needed.
3. Determine if the questions are truly indicative and relevant to the outcomes.

This data is questionable based on how it was collected and analyzed. In the future, a larger sample size taken over time should be used, the same questions should be used for all student sections as well as the same number of questions assessed per outcome and per student section. In addition, there will be more accurate and specific knowledge regarding the number of students enrolled and assessed. In terms of pedagogy, it seems important that instructors provide students with more practice with critical thinking and higher level question interpretation as well as more emphasis in lecture on these topics and more classroom discussion.

Outcome 3: Identify the structural organization of the human body, including types of cells, tissues, body cavities, and organs.

- Assessment Plan
 - Assessment Tool: Multiple choice and/or short answer questions on unit exam and/or cumulative final exam
 - Assessment Date: Winter 2016
 - Course section(s)/other population: all
 - Number students to be assessed: all
 - How the assessment will be scored: item analysis
 - Standard of success to be used for this assessment: 70% of students will score at least 70%.
 - 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)
2009	2017	

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

# of students enrolled	# of students assessed
128	68

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.

An average of 68 students completed the exam assessments regarding the knowledge for outcome #3. I performed the assessment according to the data that was provided to me from these particular sections.

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.

Two sections of Bio 109 are normally offered during the fall and winter semesters. This assessment includes data from one section from a fall semester and one section from a winter semester. Both of these sections were regular face to face sections. I combined the old and the new data for this outcome.

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

The third outcome is a core concept and is tested on primarily in exam 1, but also throughout the course, there is a reinforcement of these concepts as well as a deeper look at them so a few questions from exams 2-5 are also included (from both semesters). I used the questions provided to me that related to this outcome from exams 1 through 5 (from both semesters). Students were assessed on their performance of these questions. Item analysis was performed.

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

61% of the students (19 out of 32) scored more than 70% on the 12 questions for this outcome. The standard for success was not met.

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

Students didn't perform well overall, but did come close to reaching the measurement of success on outcome #3. Bio 109 is almost identical to Bio 111 with the exception that there is a little more coverage in muscular anatomy due to a special emphasis for students in the PTA and radiology programs. In Bio 111, students typically perform about the same or better on this outcome. From this assessment, it appears that students may have understood the location of structure, but did not have a firm grasp on the functionality of those structures.

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.

There are some questions used for outcome #3 in which less than 70% of the students answered the question correctly. Further analysis would be needed in future assessments to determine:

1. If the questions are poorly written. In this case, the solution would be to either discard the questions or rewrite them.
2. If the questions were decent, but perhaps difficult for the students, then adjustment of teaching would be needed. More emphasis in lecture, more practice and class discussion regarding the question topics might be needed.

3. Determine if the questions are truly indicative and relevant to the outcomes.

This data is questionable based on how it was collected and analyzed. In the future, a larger sample size taken over time should be used, the same questions should be used for all student sections as well as the same number of questions assessed per outcome and per student section. In addition, there will be more accurate and specific knowledge regarding the number of students enrolled and assessed. In terms of pedagogy, it seems important that instructors provide students with more practice with critical thinking and higher level question interpretation as well as more emphasis in lecture on these topics and more classroom discussion.

Outcome 4: Identify the major organ systems, their structures, and how those structures function to maintain homeostasis.

- Assessment Plan
 - Assessment Tool: Multiple choice and/or short answer questions on unit exam and/or cumulative final exam
 - Assessment Date: Winter 2016
 - Course section(s)/other population: all
 - Number students to be assessed: all
 - How the assessment will be scored: item analysis
 - Standard of success to be used for this assessment: 70% of students will score at least 70%.
 - 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)
2009	2017	

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

# of students enrolled	# of students assessed
128	64

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.

An average of 64 students completed the exam assessments regarding the knowledge for outcome #4. I performed the assessment based on data that was provided to me by these specific sections.

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.

Two sections of Bio 109 are normally offered during the fall and winter semesters. This assessment includes data from one section from a fall semester and one section from a winter semester. Both of these sections were regular face to face sections. I combined the old and the new data for this outcome.

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

The fourth outcome is a core concept and is tested throughout the course and in particular on exams 2-5. I used the questions provided to me that related to this outcome from exams 1 through 5 (from both semesters). Students were assessed on their performance of these questions. Item analysis was performed.

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

67% of the students (23 out of 34) scored more than 70% on the 8 questions for this outcome. The standard for success was not met.

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

Students didn't perform well overall, but did come close to reaching the measurement of success on outcome #4. Bio 109 is almost identical to Bio 111 with the exception that there is a little more coverage in muscular anatomy due to a special emphasis for students in the PTA and radiology programs. In Bio 111, students typically perform about the same or better on this outcome. From this assessment, it appears that students had a fairly decent understanding of organ structure, but perhaps struggled with higher level questions that involved multiple steps in mentally coming up with an answer or perhaps misunderstood the language used in the question.

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.

There are some questions used for outcome #3 in which less than 70% of the students answered the question correctly. Further analysis would be needed in future assessments to determine:

1. If the questions are poorly written. In this case, the solution would be to either discard the questions or rewrite them.
2. If the questions were decent, but perhaps difficult for the students, then adjustment of teaching would be needed. More emphasis in lecture, more practice and class discussion regarding the question topics might be needed.
3. Determine if the questions are truly indicative and relevant to the outcomes.

This data is questionable based on how it was collected and analyzed. In the future, a larger sample size taken over time should be used, the same questions should be used for all student sections as well as the same number of questions assessed per outcome and per student section. In addition, there will be more accurate and specific knowledge regarding the number of students enrolled and assessed. In terms of pedagogy, it seems important that instructors provide students with more practice with critical thinking and higher level question interpretation as well as more emphasis in lecture on these topics and more classroom discussion.

Outcome 5: Demonstrate proficiency in lab-based skills.

- Assessment Plan
 - Assessment Tool: lab practical
 - Assessment Date: Winter 2016
 - Course section(s)/other population: all
 - Number students to be assessed: all
 - How the assessment will be scored: departmentally-developed rubric
 - Standard of success to be used for this assessment: 70% of students will score at least 70%.

- 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)
2009	2017	

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

# of students enrolled	# of students assessed
128	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.

There wasn't a collection of data for this outcome, so there wasn't an assessment performed.

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 wasn't a collection of data for this outcome, so there wasn't an assessment performed.

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

There wasn't a collection of data for this outcome, so there wasn't an assessment performed.

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
 There wasn't a collection of data for this outcome, so there wasn't an assessment performed.

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.

- 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

- 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 hasn't been assessed for a long time. Marvin Boluyt offered his data from the 2009 semester and Lee Foley offered data from the 2017 semester. I combined the old and the new data for each outcome. While this is not ideal, it will offer some information about the success of Bio 109 students. Although, I do not normally teach this course, I was not surprised by most of the results when performing the assessment because I suspect that the success of Bio 109 students closely mimics the success of Bio 111 students because of the similar nature of the two courses.

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

This data will be shared with the departmental-time faculty at a regular department meeting. This data will also be shared with the part-time instructors who most regularly teach this course and in the future will be providing the assessment data.

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Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Assessment Tool	Use consistent and ongoing assessment of the Bio 109 Course. -Larger sample size -Use same questions and same number of questions per outcome and per student session	Better testing results	2017

Assessment Tool	<p>Embedded and thoroughly vetted exam questions used in both sections of Bio 109.</p> <p>Going forward, this course will be assessed every semester.</p>	<p>This will provide much more data and so will give better information regarding the success of the Bio 109 students.</p>	2017
Course Assignments	<p>Better pedagogical practices.</p> <p>-More lecture and class room discussion on specific outcome topics</p> <p>-More student practice on higher level Bloom questions</p>	<p>Increased student success</p>	2018
Other: Lack of Data	<p>Lab Outcome #5 assessed.</p> <p>I will make a plan with the part-time instructors who teach this course concerning the lab assessment and how to institute this as another part of the ongoing (every semester) course evaluation.</p>	<p>This will provide assessment information on the success of Bio 109 students in the laboratory portion of this course.</p>	2017

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

5.

III. Attached Files

[Bio 109 Assessment Questions](#)

[Bio 109 Data](#)

Faculty/Preparer:	Susan Dentel	Date: 05/22/2017
Department Chair:	Anne Heise	Date: 05/24/2017
Dean:	Kristin Good	Date: 05/30/2017
Assessment Committee Chair:	Michelle Garey	Date: 08/31/2017

COURSE ASSESSMENT REPORT

Background Information

1. Course assessed:

Course Discipline Code and Number: BIO 109
Course Title: Essentials of Human Anatomy and Physiology
Division/Department Codes: MNBS/LIF

2. Semester assessment was conducted (check one):

- Fall 2006
- Winter 20__
- 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): Cumulative Final Exam and Lab Performance

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.
Cumulative final exam questions are modified every semester.

5. Indicate the number of students assessed/total number of students enrolled in the course.

38/49

6. Describe how students were selected for the assessment.

all who took the final exam were assessed

Results

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

Ongoing changes based on feedback from instructors of the Radiography Program, into which this course feeds.

2. State each outcome from the master syllabus that was assessed.

all were assessed

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 summary. The data suggest that all outcomes were achieved.

4. For each outcome assessed, indicate the standard of success used, and the percentage of students who achieved that level of success.

The standard was 70% of the students responding correctly to clusters of questions. These percents and copies of the questions are attached.

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

Please return completed form to the Office of Curriculum & Assessment, SC 247.

4/DB sj 2/8/07

COURSE ASSESSMENT REPORT

Strengths: The assessment results indicate that the target level of successful student learning outcomes was achieved.

Weaknesses: Student performance in two areas, namely homeostasis and cellular concepts, was lower (although clearly above threshold) than in the other assessment areas.

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, along with a timeline for these actions.
Cells and homeostatic mechanisms are areas that have historically been challenging for students. Faculty in this area will be discussing these results this winter. We anticipate that technology-based approaches, such as DVD and web-based animations will be a major component. In addition, we will adjust ongoing development of lab-based case studies to specifically emphasize homeostasis. We began implementing these changes during fall 2006 based on assessment results for BIO 111 and will continue to do so during winter 2007.
2. Identify any other 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.
 - Master syllabus
Change/rationale:
 - Curriculum
Change/rationale:
 - Course syllabus
Change/rationale: restate objectives for better consistency with assessment tools/more careful alignment between outcome objectives and assessment tools should help students
 - Course assignments
Change/rationale:
 - Course materials (check all that apply)
 - Textbook
 - Handouts
 - Other: modify objectives (handouts and on Blackboard) for consistency with assessment tools
Change/rationale:
 - Instructional methods
Change/rationale: We are changing the emphasis on lab quizzes from assessment to pedagogy by redesigning the quizzes to be collaborative activities.
 - Other: Cadaver Lab
Change/rationale: We will be bringing the cadaver lab online this term. We believe that this will provide a new bridge to concepts for our students and will incorporate it in future outcome assessments.

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 revealed areas where students are successful as well as areas where improvement can occur. In this regard the tools were useful.
2. If the assessment tools were not effective, describe the changes that will be made for future assessments.
Assessment tools appear effective, but evaluation and modification is ongoing -- in particular, we will continue to check for consistency between stated outcome objectives and corresponding assessment tools.

COURSE ASSESSMENT REPORT

Submitted by:

Name: David Stine

Date: 1/5/07

Department Chair: ~~John Grossman~~

Date: 1/5/07

Dean: M. Spauld

Date: 1/10/07