

Course Assessment Report  
Washtenaw Community College

Discipline	Course Number	Title
Biology	212	BIO 212 08/03/2019- Pathophysiology: Alterations in Structure and Function
Division	Department	Faculty Preparer
Math, Science and Engineering Tech	Life Sciences	Susan Dentel
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?

Yes

This course was previously assessed in the Winter of 2010.

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

For two of the outcomes (Outcomes 2 and 3), the assessment result was successful. For one of the outcomes (Outcome 1), the assessment result was not successful.

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

I included more exercises in class that relate to these systems. Students need more reviews of basic concepts before discussion of pathophysiology. I also used more case study analysis in class particularly associated with cardiovascular and respiratory systems. I did not change or revise the assessment questions because I felt that I needed to see if my instructional additions were helpful.

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

Outcome 1: Build on the concept of normal function expounded in Biology 111, and for each main system, explain the mechanisms of pathophysiology as they contrast to normal function, and illustrate with specific diseases.

- Assessment Plan

- Assessment Tool: Multiple choice and/or short answer questions on unit exam.
- Assessment Date: Winter 2008
- Course section(s)/other population: All
- Number students to be assessed: All
- How the assessment will be scored:
- Standard of success to be used for this assessment:
- Who will score and analyze the data:

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

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2019, 2018, 2017, 2016, 2015, 2014, 2013, 2012, 2011	

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

# of students enrolled	# of students assessed
1156	1043

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.

The number of students assessed differs from the number of students enrolled due to student drop/withdrawal and the inability to include DL students.
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4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

Assessment was performed from all on-campus, day sections and all mixed-mode evening section from Winter 2011-Winter 2019. DL sections were not assessed because the exam questions did not align with the assessment requirements.
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5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

I used five embedded questions derived from Exam 1, Exam 3, Exam 4 and Exam 5 to assess the number of students who answered questions correctly. The total number of correct responses was tabulated for each question. This number was
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then divided by the total number of students to give the percentage correct per question. I then averaged the percentages for 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: No

The success standard of 70% of the students scoring 75% on correctly answered questions was not met. Students scored 73% on correctly answered questions for outcome 1.

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

Embedded questions 1 and 4 for outcome 1 surpassed the success standard set. These questions were very straightforward and test for basic concepts covered in the course.

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.

Embedded questions 2, 3 and 5 did not meet the standard set. These questions were more difficult and challenged students to think through a few factors in order to find the correct answer. Question 3 had the lowest success rate. Question 3 is over a topic that students frequently get confused about. I see students confusing left-sided and right-sided heart failure with cor pulmonale. In the future, it would be very beneficial to work with slightly different learning outcomes and objectives. Also, I would consider revising both the questions being asked as well as the number of questions per outcome. I would also like to include DL sections in the next assessment.

Outcome 2: Describe the multiple defense systems that protect our normal organ-system functions. Explain how dysfunction of these systems can disrupt these defenses.

- Assessment Plan
  - Assessment Tool: Multiple choice and/or short answer questions on unit exam.
  - Assessment Date: Winter 2008
  - Course section(s)/other population: All

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

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

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
2018, 2017, 2016, 2016, 2015, 2014, 2013, 2012	2019, 2018, 2017, 2016, 2015, 2014, 2014, 2013, 2012, 2011	2018, 2017, 2016, 2015, 2014, 2013, 2012, 2011

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

# of students enrolled	# of students assessed
2780	996

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.

The number of student assessed differs from the number of students enrolled due to student drop/withdrawal and the inability to include DL students.

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.

Assessment was performed from two on-campus, day sections and one mixed-mode evening section from Winter 2011-Winter 2019. DL sections were not assessed because the exam questions did not align with the assessment requirements.

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

I used five embedded questions derived from Exam 2 to assess the number of students who answered questions correctly. The total number of correct responses was tabulated for each question. This number was then divided by the total number of students to give the percentage correct per question. I then averaged the percentages for outcome 2.

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>
The success standard of 70% of the students scoring 75% on correctly answered questions was not met. Students scored 70% on correctly answered questions.

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

Students generally performed better on embedded exam 2 questions 2, 3 and 4; however, they did not meet the standard of success.
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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.

Embedded questions 1 and 4 for outcome 2 fell well below the standard of success. Outcome 2 covers topics associated with the immune system, fluids/electrolytes/acids and bases and hematology. These topics are usually difficult for many students. I will work on implementing more practice question work and class discussion regarding these topics. In the future, it would also be very beneficial to work with slightly different learning outcomes and objectives. I will include DL sections in the next assessment.
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Outcome 3: Explain the roles of genetic factors in determining normal and abnormal anatomy and physiology.

- Assessment Plan
    - Assessment Tool: Multiple choice and/or short answer questions on unit exam.
    - Assessment Date: Winter 2008
    - Course section(s)/other population: All
    - Number students to be assessed: All
    - How the assessment will be scored:
    - Standard of success to be used for this assessment:
    - Who will score and analyze the data:
1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
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2018, 2017, 2016, 2016, 2015, 2014, 2013, 2012	2019, 2018, 2017, 2016, 2015, 2014, 2014, 2013, 2012, 2011	2018, 2017, 2016, 2015, 2014, 2013, 2012, 2011
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2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
2780	1043

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.

The number of students assessed differs from the number of students enrolled due to student drop/withdrawal and the inability to include DL students.

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.

Assessment was performed from two on-campus, day sections and one mixed-mode evening section from Winter 2011-Winter 2019. DL sections were not assessed because the exam questions did not align with the assessment requirements.

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

I used five embedded questions derived from Exam 1 to assess the number of students who answered questions correctly. The total number of correct responses was tabulated for each question. This number was then divided by the total number of students to give the percentage correct per question. I then averaged the percentages for 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 success standard of 70% of the students scoring 75% on correctly answered questions was met. Students scored 75% on correctly answered questions.

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

Embedded questions 1, 2 and 3 met the standard of success. I stress the importance of genetics on disease process throughout most of the semester and in particular, with the Exam 1 unit.

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.

Embedded questions 4 and 5 did not meet the standard of success. Overall, the standard of success was met for outcome 3. In the future, it would be very beneficial to work with slightly different learning outcomes and objectives. I will consider revising both the questions being asked as well as the number of questions per outcome I would also like to include DL sections in the next assessment.

### 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.

I took my previous assessment and used it to inform my instructional strategies for pathophysiology such as including more exercises in class that relate to body systems that were challenging to students and more reviews of basic concepts in anatomy and physiology. I also made case studies an integral part of the course with particular emphasis on the cardiovascular and respiratory systems.

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?

This is a difficult course. Overall, I think this course does meet the needs of the students; however, there is room for improvement. I think working on making my exam questions more easily understood, adding more practice exercises both in and out of class, and presenting material in a different way as to highlight patterns as opposed to digesting large amounts of material. I was not surprised by the student achievement with these learning outcomes.

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

I will discuss the results with the instructors who teach pathophysiology this upcoming Fall 2019 semester. I will share with them the revised outcomes and objectives as well as include them in on a discussion regarding the embedded exam questions. I will do the necessary work to include DL sections in future assessments.

4.

Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Outcome Language	Revised outcomes (already submitted with the syllabus review)	Student achievement results were not where they needed to be. I think the problem is multi-factorial based on poorly written outcomes and objectives, questions that could be written to be more understandable and instructional strategies that zone in on overall big patterns of disease progression as opposed to coverage of huge amounts of material.	2019
Assessment Tool	Revised questions and number of questions per outcome.	Student achievement results were not where they needed to be. I think the problem is multi-factorial based on poorly written outcomes and objectives, questions that could be written to be more understandable and instructional strategies that zone in on overall big patterns of disease progression as	2020

		opposed to coverage of huge amounts of material.	
Objectives	Revised objectives (already submitted with syllabus review).	Objectives need to be clearer and concise but still inclusive of various components covered in class. Previous objectives seemed unfocused.	2019
Other: Instructional Strategies.	I plan on including more practice exercises both in and out of class along with a different approach to how the material is covered.	Student achievement results were not where they needed to be. I think the problem is multi-factorial based on poorly written outcomes and objectives, questions that could be written to be more understandable and instructional strategies that zone in on overall big patterns of disease progression as opposed to coverage of huge amounts of material.	2019
Other: Align DL Exams w/ Assessment Requirement	Modify the DL exams to assure that assessment data can be collected in future semesters.	DL data was excluded from this report but needs to be included in all future reports.	2021

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

6.
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### III. Attached Files

[Data for Outcome Questions](#)  
[Assessment Questions](#)

**Faculty/Preparer:** Susan Dentel **Date:** 08/03/2019  
**Department Chair:** Anne Heise **Date:** 08/05/2019  
**Dean:** Victor Vega **Date:** 09/26/2019  
**Assessment Committee Chair:** Shawn Deron **Date:** 11/22/2019

**COURSE ASSESSMENT REPORT**

**I. Background Information**

1. Course assessed:  
 Course Discipline Code and Number: Bio 212  
 Course Title: Pathophysiology  
 Division/Department Codes: MNSB
  
2. Semester assessment was conducted (check one):  
 Fall 20\_\_  
 Winter 2010\_\_  
 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):
  
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.

**Unit exams were used in the last assessment, but questions are new.**

5. Indicate the number of students assessed/total number of students enrolled in the course.  
**One double section of Bio 212 was assessed with approximately 48 students. (49 on Exam 1 to 44 on Exam 5)**
  
6. Describe how students were selected for the assessment.  
**The students assessed were from one lecture section of Bio 212.**

**II. Results**

1. Briefly describe the changes that were implemented in the course as a result of the previous assessment.  
**The previous assessment indicated that this course was successful in teaching the course outcomes. This new assessment shows that student success is still reasonably adequate, but indicates areas for improvement.**
  
2. List each outcome that was assessed for this report exactly as it is stated on the course master syllabus.  
**Outcome 1:** Be able to identify concepts associated with normal function, expounded in Bio 111. For each main system, identify the mechanisms of pathophysiology as they contrast to normal function as shown with specific diseases.  
**Outcome 2:** Recognize the multiple defense systems that protect our normal organ-system functions and recognize how dysfunction of these systems can disrupt these defenses.  
**Outcome 3:** Identify roles of genetic factors in determining normal and abnormal anatomy and physiology.

**COURSE ASSESSMENT REPORT**

- 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.*

I gave 5 unit exams during the Winter of 2010 semester. For each exam, I selected questions that could be used to assess the 3 outcomes of the course. I used a total of 5 questions to assess each outcome. I used item analysis with my scantron read-outs in order to record the percentage of students who scored correctly on each assessment question. I then took an average of the percent correct for all assessment questions related to each outcome. See data summary sheet.

Outcome	# of questions used for assessment	Average % of students answering correctly/over all questions	Was this assessment successful?
Outcome 1	5	64%	No
Outcome 2	5	79%	Yes
Outcome 3	5	83%	Yes

- 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.*

The standard of success for all 3 outcomes was 75% correctly answered questions. This number was averaged over all questions and students.

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

Strengths:

Student achievement was strong except in areas that related to cardiovascular and respiratory pathophysiology.

Weaknesses: Cardiovascular and respiratory pathophysiology.

**III. Changes influenced by assessment results**

- If weaknesses were found (see above) or students did not meet expectations, describe the action that will be taken to address these weaknesses.

Exam questions will be revised to include questions that encourage students to think of normal physiology and how it applies to the disease process. I will include more exercises in class that relate to these systems. Students need more reviews of basic concepts before discussion of pathophysiology. I will use more case study analysis to help explore different diseases associated with cardiovascular and respiratory systems. I also plan on scheduling more time in class for this particular unit.

COURSE ASSESSMENT REPORT

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.

As stated in #1, I will change exam questions, homework assignments, instructional techniques and activities.

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.  1<sup>st</sup> Day Handouts  
Change/rationale:

e. X  Course assignments  
Change/rationale:

f.  Course materials (check all that apply)  
 Textbook  
 Handouts  
 Other:

g. X  Instructional methods  
Change/rationale:

h. X  Individual lessons & activities  
Change/rationale:

3. What is the timeline for implementing these actions?

I will begin in Fall 2010.

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.

This assessment tool was satisfactory. However, in the next assessment, all sections of Bio 212 will be assessed.

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:  Nov 3, 2010

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

Submitted by:

Print:  SUSAN E. Dentel

Signature

Date:

Nov 3, 2010

**COURSE ASSESSMENT REPORT**

Faculty/Preparer

Print: *A. Heise*  
Department Chair

Signature *Anne Heise*

Date: *11-4-10*

Print: *Martha Showalter*  
Dean/Administrator

Signature *M. Showalter*

Date: *11-5-10*

*logged 11/8/10 sfx*