

**Course Assessment Report  
Washtenaw Community College**

Discipline	Course Number	Title
Biology	147	BIO 147 06/10/2019- Hospital Microbiology
Division	Department	Faculty Preparer
Math, Science and Engineering Tech	Life Sciences	Emily Thompson Ph.D.
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  Winter 2013
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2. Briefly describe the results of previous assessment report(s).

Student success in Hospital Microbiology was determined to be satisfactory for all five outcomes for Winter 2013. The average percent of student mastery for the outcomes 1-5, in order, was 72%, 75%, 81%, 89% and 84%. This was above the level of mastery desired, which was 70% or better for each outcome.
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3. Briefly describe the Action Plan/Intended Changes from the previous report(s), when and how changes were implemented.

Because student success was determined to be satisfactory, there were no Intended Changes suggested or implemented.
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**II. Assessment Results per Student Learning Outcome**

Outcome 1: Identify major characteristics of diverse microbes.

- Assessment Plan
  - Assessment Tool: Item analysis of selected objective questions on unit and/or final exams.
  - Assessment Date: Winter 2013
  - 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: For each outcome, an average of 70% of the questions will be answered correctly.
- Who will score and analyze the data: Biology 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)
2018		

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

# of students enrolled	# of students assessed
50	47

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All attending students were assessed (3 students stopped attending at this point in the two 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.

All attending students in both sections were assessed. One section was held during the day and one at night.

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

For the assessment, answers to four questions on regular exams and quizzes were blind-scored (with names blacked out). Counts of correct and incorrect answers were then 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

## Outcome 1

The first outcome was for students to identify major characteristics of diverse microbes. Four questions were used to assess this outcome, and over 70% of students met the goal for each question and for all four questions together. See Table 1 for results.

Table 1: Outcome 1

Major characteristics of diverse microbes

Topic	Incorrect	Correct
Opportunistic pathogen	9	38 (81%)
Bacteriophage	2	45 (96%)
Temperate phage	12 (all in one section)	35 (74%)
Mycoses	2	45 (96%)
Result (47 students)		Outcome met (average 87% overall)

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

The first outcome was for students to identify major characteristics of diverse microbes. Four questions were used to assess this outcome, and over 70% of students met the goal for each question and for all four questions together.

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 students met the level of success required. For continuous improvement, however, I recommend in one section to revise instruction on temperate phages because 12 of 26 students in that section missed the definition.

While working with these two wonderful instructors, it was apparent that they are master teachers. When students overwhelmingly miss a specific concept, the instructors go over the material again or allow students to write corrections so they can learn the material.

Outcome 2: Identify the major innate and adaptive defenses of the human body against microbial pathogens.

- Assessment Plan
  - Assessment Tool: Item analysis of selected objective questions on unit and/or final exams.
  - Assessment Date: Winter 2013
  - 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: For each outcome, an average of 70% of the questions will be answered correctly.
  - Who will score and analyze the data: Biology 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)
2018		

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

# of students enrolled	# of students assessed
50	47

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All attending students were assessed (3 stopped attending at this point in the two 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.

All attending students in both sections were assessed. One section was held during the day and one at night.

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

For the assessment, answers to five questions on regular exams and quizzes were blind-scored (with names blacked out) for both sections. Counts of correct and incorrect answers were then 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>Yes</u>		
<b>Outcome 2</b>		
The second outcome was for students to identify the major innate and adaptive defenses against microbial pathogens. Five questions were used to assess this outcome, and over 70% of students met the goal for each question and for all five questions together. See Table 2 for results.		
Table 2: Outcome 2:		
Identify the major innate and adaptive defenses against microbial pathogens		
Topic	Incorrect	Correct
Skin as non-specific defense	0	45 (100%)
Interferon	4	41 (91%)
Inflammation	8	37 (82%)
Phagocytosis	7	38 (84%)
Secondary immune response	5	40 (89%)
Result (45 students)		Outcome was met (average 89% overall).

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

The second outcome was for students to identify the major innate and adaptive defenses against microbial pathogens. Five questions were used to assess this outcome, and over 70% of students met the goal for each question and for all five questions together.

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.

None needed.

Outcome 3: Identify the appropriate use of antimicrobics.

- Assessment Plan
  - Assessment Tool: Item analysis of selected objective questions on unit and/or final exams.
  - Assessment Date: Winter 2013
  - 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: For each outcome, an average of 70% of the questions will be answered correctly.
  - Who will score and analyze the data: Biology 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)
2018		

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

# of students enrolled	# of students assessed
50	47

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All attending students were assessed (3 students stopped attending at this point in the two 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.

All attending students in both sections were assessed. One section was held during the day and one at night.

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

For the assessment, answers to four questions on regular exams and quizzes were blind-scored (with names blacked out). Counts of correct and incorrect answers were then 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>Yes</u>		
<b>Outcome 3</b>		
The third outcome was for students to identify the appropriate use of antimicrobics. Four questions were used to assess this outcome, and over 70% of students met the goal for each question and for all four questions together. See Table 3 for results.		
Table 3 Outcome 3		
Identify the appropriate use of antimicrobics		
Topic	Incorrect	Correct
Antibiotic	14	33 (70%)
Bacteriocidal	7	40 (85%)
Broad spectrum	2	45 (96%)
Bacteriostatic	12	35 (74%)
Result (47 students)		Outcome was met (average 78% overall).

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

The third outcome was for students to identify the appropriate use of antimicrobics. Four questions were used to assess this outcome, and over 70% of students met the goal for each question and for all four questions together.

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.

None needed.

Outcome 4: Identify various modes of disease transmission.

- Assessment Plan

- Assessment Tool: Item analysis of selected objective questions on unit and/or final exams.
- Assessment Date: Winter 2013
- 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: For each outcome, an average of 70% of the questions will be answered correctly.
- Who will score and analyze the data: Biology 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)
2018		

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

# of students enrolled	# of students assessed
50	44

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All attending students were assessed (6 students stopped attending at this point in the two 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.

All attending students in both sections were assessed. One section was held during the day and one at night.

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

For the assessment, answers to six questions on regular exams and quizzes were blind-scored (with names blacked out). Counts of correct and incorrect answers were then 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>Yes</u>		
<b>Outcome 4</b>		
The fourth outcome was for students to identify various modes of disease transmission. Six questions were used to assess this outcome, and over 70% of students met the goal for each question and for all six questions together. See Table 4 for results.		
Note this outcome was assessed with exciting case studies! The instructors were using student-centered learning when assessing this question.		
Table 4 Outcome 4		
Modes of Disease Transmission		
Topic	Incorrect	Correct
Lyme Disease	8	36 (82%)
Strep throat	4	40 (91%)
Genital Herpes	1	43 (98%)
Gas Gangrene	4	40 (91%)
Hemorrhagic E. coli	5	39 (89%)
Measles	7	37 (84%)
Result (44 students)		Outcome was met (average 89% overall).

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

The fourth outcome was for students to identify various modes of disease transmission. Six questions were used to assess this outcome, and over 70% of students met the goal for each question and for all six questions together.
Note this outcome was assessed with exciting case studies! The instructors were using student-centered learning when assessing this 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.

None needed.

Outcome 5: Identify how people limit the spread of infectious agents.

- Assessment Plan
  - Assessment Tool: Item analysis of selected objective questions on unit and/or final exams.
  - Assessment Date: Winter 2013
  - 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: For each outcome, an average of 70% of the questions will be answered correctly.
  - Who will score and analyze the data: Biology 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)
2018		

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

# of students enrolled	# of students assessed
50	47

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All attending students were assessed (3 students stopped attending at this point in the two 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.

All attending students in both sections were assessed. One section was held during the day and one at night.

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

For the assessment, answers to four questions on regular exams and quizzes were blind-scored (with names blacked out). Counts of correct and incorrect answers were then 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>Yes</u>		
<b>Outcome 5</b>		
The fifth outcome was for students to identify how people limit the spread of infectious agents. Four questions were used to assess this outcome, and over 70% of students met the goal for questions 1-3 and for all four questions together. See Table 5 for results.		
Table 5: Outcome 5		
Identify how people limit the spread of infectious agents		
	Incorrect	Correct
Sterile	1	46 (98%)
Disinfectant	1	46 (98%)
Antiseptic	1	46 (98%)
Chemical and physical methods	18 (17 in one section did not know to classify an autoclave as a physical means of sterilizing materials)	29 (62%)
Result (47 students)		Outcome was met (89% average overall).
<p>1. For each term give a short clear definition (additional terms present):</p> <p style="padding-left: 40px;">Sterile</p>		

Matching (additional terms present):

Antiseptics-reduces microbes on human tissues

Disinfectants- reduces microbes on surfaces

Chlorine is an example of a \_\_\_ (chemical) method of sterilization whereas the \_\_\_ (autoclave) is an example of a physical method. (This question was only tested in one of the two sections.)

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

The fifth outcome was for students to identify how people limit the spread of infectious agents. Four questions were used to assess this outcome, and over 70% of students met the goal for questions 1-3 and for all four questions together.

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.

Student success was met for this outcome. For continuous improvement, however, I would recommend that the instructor of one section re-teach information about autoclaves in order to ensure students have learned this material.

While working with these two wonderful instructors, it was apparent that they are master teachers. When students overwhelmingly miss a specific concept, the instructors go over the material again or allow students to write corrections so they can learn the material.

### 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.

There were no intended changes in the previous report.

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?

The course is meeting the needs of the students. It is offered in the day and evening, and the instructors are very responsive to student learning. They even worked up exciting case studies to make the learning interesting and exciting to students!

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

I will send the report to the Department Chair and the faculty who teach the course.

- 4.

Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
No changes intended.			

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

No, thanks!

### III. Attached Files

**Faculty/Preparer:** Emily Thompson Ph.D. **Date:** 06/10/2019  
**Department Chair:** Anne Heise **Date:** 06/11/2019  
**Dean:** Kimberly Jones **Date:** 07/25/2019  
**Assessment Committee Chair:** Shawn Deron **Date:** 09/10/2019

**COURSE ASSESSMENT REPORT**

**I. Background Information**

1. Course assessed:  
 Course Discipline Code and Number: BIO 147  
 Course Title: Hospital Microbiology  
 Division/Department Codes: MBNS/LIF
  
2. Semester assessment was conducted (check one):  
 X Fall 2009  
 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):  
 X Other (specify): analysis of answers on course exams
  
4. Have these tools been used before?  
 Yes  
 X 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.

The number of students in BIO 147 in the Fall of 2009 included 26 students initially enrolled in section A1, 23 in section 2, and 19 in section H1. We assessed student mastery in the course for all 68 students.

6. Describe how students were selected for the assessment.

Answers on exams from all students in all three sections from the Fall of 2009 were analyzed.

**II. Results**

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

No changes were made.

2. List each outcome that was assessed for this report exactly as it is stated on the course master syllabus.

“Outcome 1. Identify characteristics of diverse microbes.  
 Outcome 2. Identify the major innate and adaptive defenses of the human body against microbial pathogens.  
 Outcome 3. Identify the appropriate use of antimicrobics.  
 Outcome 4. Identify modes of disease transmission.  
 Outcome 5. Identify how people limit the spread of infectious agents.”

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.*

Student success in Hospital Microbiology was determined to be satisfactory for all five outcomes (see attached).

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.*

**COURSE ASSESSMENT REPORT**

The average percent of student mastery for the outcomes, in order, was 72%, 75%, 81%, 89% and 84% (see attached).

5. Describe the areas of strength and weakness in students' achievement of the learning outcomes shown in assessment results.  
 Strengths: The average percent of student mastery for each of the five outcomes was above the standard of success (70%) suggested in the master syllabus.

Weaknesses:

**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.

None noted.

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

e.  Course assignments  
 Change/rationale:

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

g.  Instructional methods  
 Change/rationale:

h.  Individual lessons & activities  
 Change/rationale:

3. What is the timeline for implementing these actions?

**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.

We believe the assessment tools were effective in measuring student achievement in BIO147. Where possible, when questions had a low mastery, the instructor gave an extra credit quiz to allow students an additional opportunity to learn the material and show mastery.

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

**COURSE ASSESSMENT REPORT**

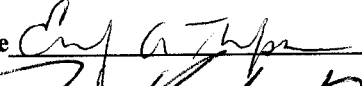

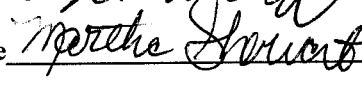
3. Which outcomes from the master syllabus have been addressed in this report?

All X Selected \_\_\_\_\_

If "All", provide the report date for the next full review: fall 2012

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

**Submitted by:**

Print: <u>Emily Thompson, Ph.D.</u> Faculty/Preparer	Signature <u></u>	Date: <u>7/21/2012</u>
Print: <u>Marvin Boluyt, Ph.D.</u> Department Chair	Signature <u></u>	Date: <u>7/21/10</u>
Print: <u>Martha Showalter</u> Dean/Administrator	Signature <u></u>	Date: <u>7/21/10</u>

*logged 7/28/10 sjf*  
Approved by the Assessment Committee 11/08