

Course Assessment Report  
Washtenaw Community College

Discipline	Course Number	Title
Biology	208	BIO 208 07/15/2021-Genetics
College	Division	Department
	Math, Science and Engineering Tech	Life Sciences
Faculty Preparer		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

This course was last assessed in February 2017.

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

There are four outcomes for the course. Student work was assessed in two consecutive classes and student work met goals on the four items assessed for outcome 1, the four items assessed for outcome 2, the two items assessed for outcome 3, and the one item assessed for outcome 4.

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

Because student work met all goals, no changes were made to the course based on assessment results.

However, the course was restructured and updated greatly in 2020 for other reasons. It was restructured to allow for more detailed lecture instruction in molecular biology, at the advice of UM faculty. It was therefore updated with additional web content and 15 brief videos. Also, the lab was converted to a high-quality, online lab during the pandemic to allow for instruction during the pandemic. Therefore, seven lab procedures (some for multi-week labs) were videotaped and lab results were photographed. Students appreciated these modifications and told me they learned a great deal from this online lab experience.

Finally, the level of success was changed to 70% of students achieving 72% or more for each outcome. I changed the standards to allow for an anticipated slightly lower achievement in a somewhat more rigorous class in Winter 2021.

## II. Assessment Results per Student Learning Outcome

Outcome 1: Describe the laws, concepts and mechanisms involved in classical Mendelian genetics; solve problems, predict outcomes, and interpret relevant literature readings.

- Assessment Plan
    - Assessment Tool: Selected questions
    - Assessment Date: Winter 2019
    - Course section(s)/other population: All sections
    - Number students to be assessed: All students in all sections
    - How the assessment will be scored: Item analysis will be made from answers in exams, homework, lab reports and/or assignments
    - Standard of success to be used for this assessment: 70% of students scoring 75% or higher on each item analyzed
    - Who will score and analyze the data: Biology 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)
2019	2021	

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

# of students enrolled	# of students assessed
34	32

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 students were assessed (I enroll myself and I think that's wehre the erroneous number 34 comes in). If a student didn't answer the question or didn't complete the assignment, their progress was scored as "0."

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 consecutive sections of Genetics, BIO 208 MM were assessed, one from Fall and one from Winter. In order to meet the needs of the community we serve, the fall MM class has the lab and problem session in the evenings and the winter MM class has the lab and problem session during the day. All attending students from all sections were assessed.

Note: the course was not offered in Winter 2020 because I was on sabbatical and it was not offered with a lab in Fall 2020 due to the pandemic. Therefore Fall 2019 and Winter 2021 were assessed.

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

The lead instructor assessed the work of all attending students on the four goals (describe, solve, predict, analyze) using rubrics for scoring. There were two questions used to assess "describe," one to assess "solve," one to assess "predict," and two different questions (one for fall 2019 and a different one for winter 2021, due to changes in the course) to assess "analyze."

The types of questions used in the assessment included: for "describe," a labeling exercise, for "solve" a half-page classic genetics problem, for "predict," a half-page classic inheritance problem, and for "analyze," an essay.

Standard: As a change, success is defined as 70% of students scoring 72% or better for each assessed item.

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, students made satisfactory progress with 76% of them meeting the goal on outcome 1. The breakdown is that 80% met goal on "describe," 75% on "solve," 69% on "predict", and 81% on "analyze."

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

The course is meeting the needs of students to transfer Genetics credits to U.S. colleges, graduate schools, medical programs, pharmacy programs, veterinary programs, enology (wine-making) programs, pharm tech programs, vet tech programs, clinical lab programs, etc... I consider student achievement is at a good level for Outcome 1.

Additionally, the course was revised between the two semesters that were assessed and the data show that the newly-revised course for Winter 2021 is leading to a good level of achievement for Outcome 1 when compared with that of Fall 2019.

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 level of student achievement was met for this Outcome, overall. However, student learning needs to be reinforced for drawing of the life cycle and predicting results from pedigree analysis. This can be accomplished by spending additional time on these problems in the review before exams or by adding these problems to the Reflections essay assignments.

Outcome 2: Describe the mechanisms involved in molecular genetics; solve problems, predict outcomes; interpret relevant literature readings; and evaluate related ethical concerns.

- Assessment Plan
    - Assessment Tool: Selected questions
    - Assessment Date: Winter 2019
    - Course section(s)/other population: All sections
    - Number students to be assessed: All students in all sections
    - How the assessment will be scored: Item analysis will be made from answers in exams, homework, lab reports and/or assignments
    - Standard of success to be used for this assessment: 70% of students scoring 75% or higher on each item analyzed
    - Who will score and analyze the data: Biology 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)
2019	2021	

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

# of students enrolled	# of students assessed
34	32

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 students were assessed. If a student didn't answer the question or didn't complete the assignment, their progress was scored as "0."

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 consecutive sections of Genetics, BIO 208 MM were assessed, one from Fall and one from Winter. In order to meet the needs of the community we serve, the fall MM class has the lab and problem session in the evenings and the Winter MM class has the lab and problem session during the day. All attending students from all sections were assessed.

Note: the course was not offered in Winter 2020 because I was on sabbatical and it was not offered with a lab in Fall 2020 due to the pandemic. Therefore Fall 2019 and Winter 2021 were assessed.

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

The lead instructor assessed work of all attending students on the four goals (describe, solve, predict, analyze) using rubrics for scoring. There was one question used to assess "describe," 1 to assess "solve," 1 to assess "predict," and two different questions (one for Fall 2019 and a different one for Winter 2021, due to changes in the course) to assess "analyze."

The types of questions for assessment included: for "describe," an essay, for "solve" and "predict," half-page molecular genetics problems, and for "analyze," an essay on a scientific paper (Winter 2021) or secondary scientific reading (Fall 2019).

Standard: As a change, success is defined as 70% of students scoring 72% or better for each assessed item.

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, students made satisfactory progress with 84% of them meeting the goal on this outcome. The breakdown is that 88% met goal on "describe," 79% on "solve," 78% on "predict", and 91% on "analyze."

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

The course is meeting the needs of students to transfer Genetics credits to U.S. colleges, graduate schools, medical programs, pharmacy programs, veterinary programs, enology programs, pharm tech programs, vet tech programs, clinical lab programs, etc... I consider student achievement is at a good level for Outcome 2.

Additionally, the course was revised between the two semesters that were assessed and the data show that the newly-revised course for w2021 is leading to a good level of achievement for Outcome 2 when compared with that for f2019.

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 level of student achievement was met for this Outcome, overall. However, students continue to need a lot of assistance with scientific literature readings. For example, they found it difficult to find the positive and negative controls in future experiments proposed by the authors in a scientific paper. Additional scientific literature readings should be added to give students more practice reading scientific papers.

Outcome 3: Describe the laws and concepts involved in population and quantitative genetics; solve problems and predict outcomes.

- Assessment Plan
  - Assessment Tool: Selected exam questions
  - Assessment Date: Winter 2019
  - Course section(s)/other population: All sections
  - Number students to be assessed: All students in all sections
  - How the assessment will be scored: Item analysis will be made from answers in exam

- Standard of success to be used for this assessment: 70% of students scoring 75% or higher on each item analyzed
- Who will score and analyze the data: Biology 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)
2019	2021	

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

# of students enrolled	# of students assessed
34	32

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 students were assessed. If a student didn't answer the question or didn't complete the assignment, their progress was scored as "0."

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 consecutive sections of Genetics, BIO 208 MM were assessed, one from Fall and one from Winter. In order to meet the needs of the community we serve, the fall MM class has the lab and problem session in the evenings and the Winter MM class has the lab and problem session during the day. All attending students from all sections were assessed.

Note: the course was not offered in Winter 2020 because I was on sabbatical and it was not offered with a lab in Fall 2020 due to the pandemic. Therefore Fall 2019 and Winter 2021 were assessed.

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

The lead instructor assessed work of all attending students on the two goals (describe, explain) using rubrics for scoring. There were two questions used to assess "describe" and three questions to assess "explain."

For assessment, multiple-choice questions were used to assess "describe" and "explain."

Standard: As a change, success is defined as 70% of students scoring 72% or better for each assessed item.

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, students made satisfactory progress with 86% of them meeting the goal on this outcome. The breakdown is that 82% met goal on "describe" and 89% met goal on "explain."

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

The course is meeting the needs of students to transfer Genetics credits to U.S. colleges, graduate schools, medical programs, pharmacy programs, veterinary programs, enology programs, pharm tech programs, vet tech programs, clinical lab programs, etc... I consider student achievement is at a good level for Outcome 3.

Additionally, the course was revised between the two semesters that were assessed and the data show that the newly-revised course for w2021 is leading to a good level of achievement for Outcome 3 when compared with that for f2019.

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 level of student achievement was met for this Outcome, overall.

I will continue to monitor student success each semester to determine if learning outcomes are being met. If they are not, this information can be re-taught and re-tested in a current semester or the course can be altered to ensure the learning outcomes are met in a future semester.

Outcome 4: In the lab, perform selected classical and molecular genetic techniques, interpret data, and propose and carry out student-designed experiments with appropriate controls.

- Assessment Plan
  - Assessment Tool: Selected lab reports and/or lab exam questions
  - Assessment Date: Winter 2019
  - Course section(s)/other population: All sections

- Number students to be assessed: All students in all sections
- How the assessment will be scored: Item analysis will be made from answers in lab exam and/or lab reports
- Standard of success to be used for this assessment: 70% of students scoring 75% or higher on each item analyzed
- Who will score and analyze the data: Biology 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)
2019	2021	

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

# of students enrolled	# of students assessed
34	32

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 students were assessed. If a student didn't answer the question or didn't complete the assignment, their progress was scored as "0."

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 consecutive sections of Genetics, BIO 208 MM were assessed, one from Fall and one from Winter. In order to meet the needs of the community we serve, the fall MM class has the lab and problem session in the evenings and the Winter MM class has the lab and problem session during the day. All attending students from all sections were assessed.

Note: the course was not offered in Winter 2020 because I was on sabbatical and it was not offered with a lab in Fall 2020 due to the pandemic. Therefore Fall 2019 and Winter 2021 were assessed.

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

The lead instructor assessed work of all attending students on the goals (interpret, propose) using rubrics for scoring. There were four questions used to assess "describe" and one to assess "propose."

The types of questions used to assess "describe" included essay for Winter 2021 and multiple-choice for Fall 2019.

Standard: As a change, success is defined as 70% of students scoring 72% or better for each assessed item.

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, students made satisfactory progress with 87% of them meeting the goal on this outcome. The breakdown is that 89% met goal on "describe" and 85% on "propose."

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

The level of student achievement was met for this Outcome, overall. Additionally, the course was revised between the two semesters that were assessed and the data show that the newly-revised course for w2021 is leading to a good level of achievement for Outcome 4 when compared with that for f2019.

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 level of student achievement was met for this Outcome, overall.

However, I have increased the difficulty of the class somewhat by adding more Bloom's level 5 and 6 questions on quizzes, exams, and Reflections essays (see data for "predict" in Outcome 4). In the future, I will offer additional support for these questions by going over the answers with detailed explanations and by offering additional practice for this type of problem.

### 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.

The course is meeting the needs of students to transfer Genetics credits to U.S. colleges, graduate schools, medical programs, pharmacy programs, veterinary programs, enology programs (wine-making), pharm tech programs, vet tech programs, clinical lab programs, etc...

The listed changes were made and many more, as well, and students responded well to them. The course was restructured on the advice of University of Michigan for w2021, to confine traditional Mendelian Genetics to the first quarter of the class to allow time to cover molecular genetics in more detail. Additionally, about 15 lecture videos were added to update the class and 7 lab videos were added to take the class online during the pandemic. The students loved it, including the lab!

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 data show the course is meeting the needs of the students for all four Outcomes.

The assessment results did not surprise me because I do some form of assessment every semester.

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

No action plan is being implemented.

- 4.

Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Course Materials (e.g. textbooks, handouts, on-line ancillaries)	<ul style="list-style-type: none"> <li>- add practice/review for questions related to pedigree analysis and the life cycle</li> <li>- add more scientific literature readings</li> <li>- offer additional practice and problems for difficult concepts</li> </ul>	These are all ways to reinforce concepts and support students in difficult areas of the course based on the current assessment.	2021

Other: standard of success	Update the standard of success to read: 70% of students will score 72% or higher for each assessed item.	This aligns with the current assessment tools.	2021
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5. Is there anything that you would like to mention that was not already captured?

No, thanks.

### III. Attached Files

[Assessment BIO208 7\\_2021](#)

**Faculty/Preparer:** Emily Thompson Ph.D. **Date:** 07/21/2021  
**Department Chair:** Anne Heise **Date:** 07/21/2021  
**Dean:** Victor Vega **Date:** 07/22/2021  
**Assessment Committee Chair:** Shawn Deron **Date:** 01/30/2022

**Course Assessment Report**  
**Washtenaw Community College**

Discipline	Course Number	Title
Biology	208	BIO 208 02/16/2017-Genetics
Division	Department	Faculty Preparer
Math, Science and Engineering Tech	Life Sciences	Emily Thompson Ph.D.
Date of Last Filed Assessment Report		

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

Outcome 1: Describe the laws, concepts and mechanisms involved in classical Mendelian genetics; solve problems, predict outcomes, and interpret literature readings.

- Assessment Plan
  - Assessment Tool: Item analysis of selected exam questions.
  - Assessment Date: Winter 2008
  - Course section(s)/other population: students taking the course (one section)
  - Number students to be assessed: up to 24 students
  - 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)
2015	2016	

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

# of students enrolled	# of students assessed
42	37

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 for two consecutive semesters were 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.

Two sections of Genetics, BIO 208 MM were assessed, one from fall and one from winter. In order to meet the needs of the community we serve, the fall MM class has the lab and problem session in the evenings and the winter MM class has the lab and problem session during the day. All students from all sections were assessed.

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

The lead instructor assessed all attending students on the four selected items using rubrics for scoring. Questions included one short answer, two problems and one short essay from Exam 1, 3 and the Final.

Standard: As a CHANGE, success is defined as 75% of students scoring 70% or better for each assessed item.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

For Outcome 1, students met goal on all 4 items. The first item was to describe some aspect of Mendelian genetics and 94% of students got 70% or better on the short answer question given. The second item was to solve a genetics problem and 84% of students got 70% or better on the dihybrid cross problem. The third item was to predict outcomes and 97% of students got 70% or better on the pedigree problem given. Finally, the fourth item tested the ability to interpret literature readings and 97% of students got 70% or better on the literature reading given.

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

I interpret this to mean that students have successfully mastered describing the laws, concepts and mechanisms involved in classical Mendelian genetics; solving problems; predicting outcomes and interpreting literature readings.

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.

I do observe that some classes are weaker in reading and writing skills and some are weaker in mathematical skills. This appears to be random and there is no trend when comparing one year with another, or day with evening classes. Therefore, reading, writing and math skills need to be reinforced in all sections of this class.

Outcome 2: Describe the mechanisms involved in molecular genetics for prokaryotics and eukaryotics, solve problems, predict outcomes, and interpret literature readings. Describe the molecular basis of various diseases, and related ethical considerations.

- Assessment Plan
  - Assessment Tool: Item analysis of selected exam questions.
  - Assessment Date: Winter 2008
  - Course section(s)/other population: students taking the course (one section)
  - Number students to be assessed: up to 24 students
  - 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)
2015	2016	

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

# of students enrolled	# of students assessed
42	36

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 for two consecutive semesters were 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.

Two sections of Genetics, BIO 208 MM were assessed, one from fall and one from winter. In order to meet the needs of the community we serve, the fall MM class has the lab and problem session in the evenings and the winter MM class has the lab and problem session during the day. All attending students from all sections were assessed.

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

For Outcome 2, a short answer question, two multiple choice questions and one short essay from the Final and Exam 3 were scored against a rubric by the lead instructor.

Standard: CHANGE: success is defined as 75% of students scoring 70% or better on all items.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

For Outcome 2, students met goal on all four items. For the first item, describe molecular genetics, 100% of students correctly answered the question on the final, and note they had the same question on Exam 3 and improved their performance from Exam 3 to the final. For item two, solve problems involving molecular genetics, 92% got 70% or better on the problem. For item 3, predict outcomes of molecular genetics experiments, 89% got 70% or better on the multiple-choice question. For item 4, describe molecular basis of genetic diseases and ethical considerations, 95% got 70% or better on the essay question on Exam 3.

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

I interpret this to mean that students have successfully mastered describing the laws, concepts and mechanisms involved in molecular genetics; solving problems; predicting outcomes; and describing molecular basis of genetic diseases and ethical considerations.

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 item that students are weakest on, every semester, even with support from me is describing the molecular basis of genetic disease with ethical considerations. Although students met goal, 45% of them received a “C” or “B” on this essay. To allow more students to correctly analyze and describe the material, I give the exact question a second time on the final and I find that many more students move into the “A” or “B” range for this essay on their second attempt. I will continue to give this evaluation twice to allow students to master the concepts.

Outcome 3: Describe the laws and concepts involved in population genetics. Explain how genetic mechanisms drive evolution.

- Assessment Plan
  - Assessment Tool: Item analysis of selected exam questions.
  - Assessment Date: Winter 2008
  - Course section(s)/other population: students taking the course (one section)
  - Number students to be assessed: up to 24 students
  - 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)
2015	2016	

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

# of students enrolled	# of students assessed
42	36

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.

Assessment, where possible, was performed on the work of all attending 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.

Two sections of Genetics, BIO 208 MM were assessed, one from fall and one from winter. In order to meet the needs of the community we serve, the fall MM class has the lab and problem session in the evenings and the winter MM class has the lab and problem session during the day. All attending students from all sections were assessed.

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

For Outcome 3, the lead instructor assessed a half page of mathematical calculations for population genetics on Lab Exam 2 and an essay on evolution on the final, using rubrics.

Standard: CHANGE: success is defined as 75% of students scoring 70% or better on all items.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

For Outcome 3, the students met goal on both items. For the first item describing population genetics, 88% of the students met goal of scoring 70% or better. For the second item explaining evolution in an essay, 94% of the students met goal of scoring 70% or better.

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

I interpret this to mean that students successfully mastered description of population genetics and explaining evolution.

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.

Although students met goal, I would like to see more students get into the “A” range when performing calculations for population genetics. More practice problems might allow greater success but each problem takes 20 minutes, limiting the number, I can assign.

Outcome 4: In the lab, perform and demonstrate understanding of selected classical and molecular genetic techniques.

- Assessment Plan
  - Assessment Tool: Item analysis of selected lab exam questions.
  - Assessment Date: Winter 2008
  - Course section(s)/other population: students taking the course (one section)
  - Number students to be assessed: up to 24 students
  - 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)
2015	2016	

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

# of students enrolled	# of students assessed
42	34

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.

Assessment, where possible, was performed on the work of all students. One student dropped out, lowering the number of assessed students for some items. Also, for this lab exam, two students failed to answer the question, also lowering the number of assessed students for this item.

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 Genetics, BIO 208 MM were assessed, one from fall and one from winter. In order to meet the needs of the community we serve, the fall MM class has the lab and problem session in the evenings and the winter MM class has the lab and problem session during the day. All attending students from all sections were assessed.

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

For Outcome 4, a problem, based on work on a fruit fly lab , was assessed using a rubric by the lead instructor.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

For Outcome 4, the students met goal on the item with 88% of the students scoring 70% or better.

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

I interpret this to mean that students successfully mastered the lab material that was assessed on fruit fly genetics.

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 goal on this outcome and success was satisfactory.

## 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 course is meeting the needs of students to transfer Genetics credits to U.S. colleges, graduate schools, medical programs, pharmacy programs, veterinary programs, enology programs, pharm tech programs, vet tech programs, clinical lab programs, etc.

The assessment results did not surprise me because I do some form of assessment every semester.

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

I will briefly discuss with others in the Bio Department how I recently changed the Genetics Course in order to make it even more transferrable to local colleges.

- 

Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Other: changes based on comparison with local u	I do plan to change the course, but not as a result of the assessment process.	I have compared my course with other genetics courses and have added: a few vocabulary words; a brief description of recombination using the Holliday structure; a brief introduction to quantitative genetics; two lab reports in the place of two worksheets; and some substitution of higher-order Bloom's category test questions for lower-order ones in multiple-choice questions. I believe the changes will make the course more likely to transfer to local schools.	2016

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

5.

### III. Attached Files

[BIO 208 for review 2 2017](#)

<b>Faculty/Preparer:</b>	Emily Thompson Ph.D.	<b>Date:</b> 02/16/2017
<b>Department Chair:</b>	Anne Heise	<b>Date:</b> 02/21/2017
<b>Dean:</b>	Kristin Good	<b>Date:</b> 02/23/2017
<b>Assessment Committee Chair:</b>	Ruth Walsh	<b>Date:</b> 03/19/2017

**COURSE ASSESSMENT REPORT**

**I. Background Information**

1. Course assessed:

Course Discipline Code and Number: BIO 208

Course Title: Genetics

Division/Department Codes: MNS/LIF

2. Semester assessment was conducted (check one):

Fall 20\_\_

Winter 2008

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): Lecture exams, lab exams, and final 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.

19/19 at the beginning of the course (all); 16/17 at the end of the course (one enrolled student chose not to take the final).

6. Describe how students were selected for the assessment.

All students taking the assessment question were assessed for Achievement Level.

**II. Results**

1. Briefly describe the changes that were implemented in the course as a result of the previous assessment.  
None.

2. State each outcome (verbatim) from the master syllabus for the course that was assessed.

**1. Describe the laws, concepts and mechanisms involved in classical Mendelian genetics; solve problems, predict outcomes, and interpret literature readings.**

**2. Describe the mechanisms involved in molecular genetics for prokaryotes and eukaryotes, solve problems, predict outcomes and interpret literature readings. Describe the molecular basis of various diseases, and related ethical considerations.**

**3. Describe the laws and concepts involved in population genetics. Explain how genetic mechanisms drive evolution.**

**4. In the lab, perform and demonstrate understanding of selected classical and molecular genetic techniques.**

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.*

Students were assessed for their Achievement Level on 11 questions that were representative of the course content. There were 3 questions for Outcome 1, 3 for Outcome 2, 2 for Outcome 3 and 3 for Outcome 4.

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

*Approved by the Assessment Committee 10/10/06*

**COURSE ASSESSMENT REPORT**

Attached is a "Summary and Analysis of Data Collected," which gives the data and an explanation of how the data were tabulated. Table 1 shows the percent of the students at each Achievement Level for each of the 11 questions assessed. For each of the 11 questions, at least 79% of students had Excellent Achievement Levels, meaning the student scores were between 85-100%. Moreover, at least 81% of students had Good or Excellent Achievement Levels on each of the questions, meaning student scores were between 70-100%.

The standard of success was defined as 70% of students achieving scores of Good or Excellent for each question studied. Assessment results showed that 81% or more of the students demonstrated significant mastery of each question and therefore indicate that the standard of success was met and exceeded.

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.*

Attached, please find the "Rubric for Assessment", which gives details of the rubric used in the assessment. Please find on the "Summary and Analysis of Data Collected," the tables summarizing the data collected on student achievement for the course outcomes.

Results of the assessment are given in Table 1 and are described above. Results are shown a slightly different way in Table 2, which shows the percent of students at each Achievement Level averaged for a given outcome. Eighty-seven percent of students mastered the three questions of Outcome 1 with an Excellent Achievement Level (student score of 85-100%) and 7.5% with a Good Achievement Level (student score of 70-84%). For the three questions of Outcome 2, 86% of students had an Excellent Achievement Level and 2% had a Good Achievement Level. Outcome 3 results were averaged for two questions and 97% of students got an Excellent Achievement Level and 0% got a Good Achievement Level. Finally, for the 3 questions of Outcome 4, 86% of students got an Excellent Achievement Level and 0% got a Good Achievement Level.

These results show that an average of 86% or more of students mastered the four outcomes of the course with Good or Excellent Achievement Levels. While not part of the standard of success, these results confirm that the students are successfully mastering the outcomes of the course.

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

Strengths:

The students are mastering complex content and mastery can be assessed by looking at student responses to a cluster of exam questions that are representative of course content. The standard of success was met and exceeded in this course.

Weaknesses: None

**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.
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

COURSE ASSESSMENT REPORT

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.

The assessment tools appear to be effective in measuring student achievement.

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: 2011

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

Submitted by:

Name: Emily A. Thompson, Ph.D. / Emily A. Thompson Date: May 21, 2008  
Print/Signature

Department Chair: Estia Grossman / Estia Grossman Date: 5/22/08  
Print/Signature

Dean: M. Shoval Date: MAY 23 2008  
Print/Signature

logged 4/19/08 sjv