

Course Assessment Report  
Washtenaw Community College

Discipline	Course Number	Title
Biology	201	BIO 201 07/23/2021- Physiology of Exercise
College	Division	Department
	Math, Science and Engineering Tech	Life Sciences
Faculty Preparer		Marvin Boluyt
Date of Last Filed Assessment Report		08/24/2015

**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 assessed in May of 2015.

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

This course appears to be meeting the needs of the students well. There were no surprises in the data. No major changes are needed.

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

The tool for evaluating laboratory skills was inappropriate and inadequately described in the master syllabus. Therefore, it was modified as follows. Formal laboratory reports were submitted by the students and were evaluated using a rubric.

Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Assessment Tool	The method of evaluating the lab skills (outcome 4) will be modified to better evaluate this outcome. A rubric will be used to assess	The assessment method proposed in the original master syllabus was inappropriate and inadequate.	2015

	formal laboratory reports (see attached).		
Other: Lecture Material	The lecture material will be slightly modified to emphasize the aspects of endocrine function and mechanical efficiency that were found to be deficient in terms of student performance.	Students performed inadequately on these questions, indicating they were deficient in their understanding of these topics.	2015

## II. Assessment Results per Student Learning Outcome

Outcome 1: Identify the cellular and systems physiological principles that underly exercise performance, metabolism, and nutrition.

- Assessment Plan
  - Assessment Tool: Departmentally-designed questions
  - Assessment Date: Fall 2017
  - Course section(s)/other population: All
  - Number students to be assessed: All
  - How the assessment will be scored: A selected set of exam questions that address this outcome will be assessed by item analysis.
  - Standard of success to be used for this assessment: At least 70% of students will score at least 70% on a selected set of questions from exams embedded in the course.
  - Who will score and analyze the data: Life Science 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)
2020		

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

# of students enrolled	# of students assessed
10	8

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.

Two students who were performing well at the time of withdrawal dropped the course due to pandemic-related issues and/or medical issues.

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.

BIO 201 is offered only once a year during Fall semester during the day.

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

The final exam consists of questions randomly selected from pools of questions on this outcome. The 10 most commonly occurring questions on the final exam that address this outcome were assessed.

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

On 9 of the 10 questions analyzed, more than 70% of students answered correctly.

The success rate on the other question was 60% correct responses.

Student performance on 9 questions meets or exceeds the standard of success (70%).

Student performance on 1 question falls short of the standard of success (70%).

At least 70% of the students answered correctly on at least 90% of the sample of questions. This exceeds the standard of success.

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

Students exceeded the standard of success for this outcome. They exhibited strength across a wide range of topics within this outcome. Students were able to analyze, criticize, evaluate the strengths and weaknesses of and interpret original scientific research publications quite well, and they demonstrated improvement throughout the semester. This was evident in their performance on exams, in their discussion board posts, and in the quality of the classroom and laboratory

discussions. They were not only able to understand what the evidence tells us about the cellular and systems physiological principles that underly exercise performance, metabolism, and nutrition, but were able to evaluate the strengths and limitations of that evidence.

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.

Performance was so solid in this area that no substantive changes are recommended. Continuous improvement is encouraged by promoting engagement of the students with the PubMed database so that they can challenge or reinforce accepted notions with evidence.

Outcome 2: Identify biological responses to environmental stressors that modify exercise performance and health status.

- Assessment Plan
  - Assessment Tool: Departmentally-designed questions
  - Assessment Date: Fall 2017
  - Course section(s)/other population: All
  - Number students to be assessed: All
  - How the assessment will be scored: A selected set of exam questions that address this outcome will be assessed by item analysis.
  - Standard of success to be used for this assessment: At least 70% of students will score at least 70% on a selected set of questions from exams embedded in the course.
  - Who will score and analyze the data: Life Science 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)
2020		

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

# of students enrolled	# of students assessed
10	8

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.

Two students who were performing well at the time of withdrawal dropped the course due to pandemic-related issues and/or medical issues.

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.

BIO 201 is offered only once a year during Fall semester during the day.

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

The final exam consists of questions randomly selected from pools of questions on this outcome. The 10 most commonly occurring questions on the final exam that address this outcome were assessed.

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

On 8 of the 10 questions analyzed, more than 70% of students answered correctly.

The success rate on the other two questions was 67%.

Student performance on 8 questions met or exceeded the standard of success (70%).

Student performance on 2 questions fell short of the standard of success (70%).

At least 70% of the students answered correctly on at least 80% of the sample of questions. This exceeds the standard of success.

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

Students exceeded the standard of success for this outcome. They exhibited strength across a wide range of topics within this outcome. It appears to this instructor that the direct engagement of the students with the scientific literature on these topics fosters a deeper understanding and better performance on outcome measures and other indicators, such as discussion boards, class discussions, and required papers.

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.

Performance was so solid in this area that no substantive changes are recommended. Continuous improvement will be pursued by encouraging more independent scientific literature engagement.

Outcome 3: Identify the effects of acute and chronic exercise on health risk status, disease prevention and treatment, and on age-associated changes in biological function.

- Assessment Plan
  - Assessment Tool: Departmentally-designed questions
  - Assessment Date: Fall 2017
  - Course section(s)/other population: All
  - Number students to be assessed: All
  - How the assessment will be scored: A selected set of exam questions that address this outcome will be assessed by item analysis.
  - Standard of success to be used for this assessment: At least 70% of students will score at least 70% on a selected set of questions from exams embedded in the course.
  - Who will score and analyze the data: Life Science 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)
2020		

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

# of students enrolled	# of students assessed
10	8

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.

Two students who were performing well at the time of withdrawal dropped the course due to pandemic-related issues and/or medical issues.

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.

BIO 201 is offered only once a year during Fall semester during the day.

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

The final exam consists of questions randomly selected from pools of questions on this outcome. The 10 most commonly occurring questions on the final exam that address this outcome were assessed.

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

On 9 of the 10 questions analyzed, more than 70% of students answered correctly.

The success rate on the other question was 60%.

Student performance on 9 questions meets or exceeds the standard of success (70%).

Student performance on 1 question falls short of the standard of success (70%).

At least 70% of the students answered correctly on at least 90% of the sample of questions. This exceeds the standard of success.

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

Students exceeded the standard of success for this outcome. They exhibited strength across a wide range of topics within this outcome.

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.

Performance was so solid in this area that no substantive changes are recommended. Continuous improvement may be achieved by promoting more engagement with the scientific literature to support or refute ideas.

Outcome 4: Reliably and accurately measure physiological and biometric variables.

- Assessment Plan
  - Assessment Tool: Responses to questions on laboratory exercises and laboratory reports
  - Assessment Date: Fall 2017
  - Course section(s)/other population: All
  - Number students to be assessed: All
  - How the assessment will be scored: Students will be scored on formal laboratory reports using a departmentally-developed rubric.
  - Standard of success to be used for this assessment: At least 70% of students are expected to score 75% or better on each laboratory report.
  - Who will score and analyze the data: Life Science 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)
2020		

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

# of students enrolled	# of students assessed
10	8

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.

Two students who were performing well at the time of withdrawal dropped the course due to pandemic-related issues and/or medical issues.

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.

BIO 201 is offered only once a year during Fall semester during the day.

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

Formal laboratory reports were submitted by the students and were evaluated using a rubric (attached).

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>
Four formal laboratory reports were submitted and evaluated according to a rubric.
Lab 3 Formal Report: 8 of 8 students (100%) scored better than 80%. Standard of success exceeded.
Lab 5 Formal Report: 7 of 8 students (87.5%) scored better than 70%. Standard of success exceeded.
Lab 10 Formal Report: 8 of 8 students (100%) scored better than 80%. Standard of success exceeded.
Lab 12 Formal Report: 6 of 8 students (75%) scored better than 80%. Standard of success exceeded.

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

Students exceeded the standard of success for this outcome. They exhibited strength across a wide range of topics within this outcome. The strength of this outcome is of course the hands-on-nature of laboratory work, but also the relatively small class size, which allows more direct supervision and more practice time.
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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.

Performance was so solid in this area that no substantive changes are recommended. Continuous improvement will be sought by a focus on optimizing the laboratory experience by improving the use of time and increasing the number of practice trials students are able to perform.
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### 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 changes made in the assessment of outcome 4 and in the emphasis in lecture on certain topics appear to have been very successful.

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?

Students generally perform very well in this course. Possible reasons for this success may include:

1. Relatively small class size/ good teacher-pupil ratio.
2. Rigorous prerequisites prepare students well.
3. Students are allowed revisions of written papers.
4. Students are motivated by career goals.
5. Course activities are effective in preparing students for the evaluations.

There were no surprises.

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

No action plan is recommended.

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.

### III. Attached Files

[BIO 201 data](#)

[Formal Lab Report Rubric](#)

**Faculty/Preparer:** Marvin Boluyt **Date:** 08/02/2021  
**Department Chair:** Anne Heise **Date:** 08/04/2021  
**Dean:** Victor Vega **Date:** 08/10/2021

**Assessment Committee Chair:** Shawn Deron **Date:** 11/30/2021

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

Discipline	Course Number	Title
Biology	201	BIO 201 05/14/2015- Physiology of Exercise
Division	Department	Faculty Preparer
Math, Science and Engineering Tech	Life Sciences	Marvin Boluyt
Date of Last Filed Assessment Report		

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

Outcome 1: Identify the cellular and systems physiological principles that underly exercise performance, metabolism, and nutrition.

- Assessment Plan
  - Assessment Tool: Departmentally designed questions.
  - 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)
2014		

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

# of students enrolled	# of students assessed
10	10

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 10 students were assessed on this outcome.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

This course is only offered during fall semester. Only one section of the course is offered. During the fall 2014 semester, the course was offered in the evening.

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

The final exam chooses questions randomly from pools of questions on this outcome. The 10 most commonly occurring questions on the final exam that address this outcome were assessed.

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

On 8 of the 10 questions analyzed, more than 70% of students answered correctly.

The success rate on the other two questions was 67% and 40% correct responses, respectively.

8 questions meet the standard of success (70%).

2 questions fell short of the standard of success (70%).

At least 70% of the students answered correctly on at least 70% of the sample of questions. This meets the standard of success.

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

Students generally performed well on this outcome, exceeding the standard of success.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

As indicated by substandard performance on 2 questions, however, there is room for improvement. The two questions that were challenging addressed the

endocrine system and mechanical efficiency. These two areas will be targeted for extra emphasis in the lectures covering these topics.

Outcome 2: Identify biological responses to environmental stressors that modify exercise performance and health status.

- Assessment Plan
  - Assessment Tool: Departmentally designed questions.
  - 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)
2014		

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

# of students enrolled	# of students assessed
10	10

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.

N/A

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

This course is only offered during fall semester. Only one section of the course is offered. During the fall 2014 semester, the course was offered in the evening.

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

Questions for exam 5 were randomly drawn from pools of questions that address the outcome dealing with biological responses to environmental stressors that modify exercise performance and health status. Students were assessed on a subset of 11 of these questions. Item analysis was performed.

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

Met Standard of Success: Yes

More than 70% of the students answered 10 of 11 questions correctly. For the eleventh question, 67% of the students answered correctly. This exceeds the standard of success.

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

Students exceeded the standard of success for this outcome. They exhibited strength across a wide range of topics within this outcome.

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.

Performance was so solid in this area that no substantive changes are recommended.

Outcome 3: Explain effects of acute and chronic exercise on health risk status, disease prevention and treatment, and on age-associated changes in biological function.

- Assessment Plan
    - Assessment Tool: Departmentally designed questions.
    - 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)
2014		

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

# of students enrolled	# of students assessed
10	10

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 10 students were assessed on this outcome.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

This course is only offered during fall semester. Only one section of the course is offered. During the fall 2014 semester, the course was offered in the evening.

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

The final exam chooses questions randomly from pools of questions on this outcome. The 10 most commonly occurring questions on the final exam that address this outcome were assessed.

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  
 At least 70% of students answered correctly on each of the 10 sample questions used to assess this outcome. This meets the standard of success.

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

More than 70% of students answered correctly on all 10 questions that targeted this outcome. This exceeds the standard of success.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

There is little room for improvement for this outcome.

Outcome 4: Reliably measure physiological and biometric variables.

- Assessment Plan
  - Assessment Tool: Responses to questions on laboratory exercises and laboratory reports.
  - 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)
2014		

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

# of students enrolled	# of students assessed
10	10

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 10 of 10 students were assessed on this outcome.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

This course is only offered during fall semester. Only one section of the course is offered. During the fall 2014 semester, the course was offered in the evening.

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

The tool for evaluating laboratory skills was inappropriate and inadequately described in the master syllabus. Therefore, it was modified as follows. Formal laboratory reports were submitted by the students and were evaluated using a rubric (attached).

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

Four formal lab report assignments were evaluated: (Lab 3: Energy Intake and Expenditure, Lab 5: Aerobic Capacity, Lab 10: Exercise Training Plans, and Lab 12: Body Composition).

Lab 3: 9 of 10 students submitted a report (90%). All 9 (100%) scored >75%.

Lab 5: 7 of 10 students submitted a report (70%). 5 of 7 (71%) scored >75%.

Lab 10: 9 of 10 students submitted a report (90%). 9 of 9 (100%) scored >75%.

Lab 12: 7 of 10 students submitted a report (70%). 7 of 7 (100%) scored >75%.

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

Students performed well on this assignment if they put forth the time and effort necessary. Revisions were allowed if the initial submission contained deficiencies. The formal laboratory reports serve dual purposes. They are both evaluations and learning tools.

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.

Because revisions are allowed, students tend to be successful on this outcome if they are diligent. The greatest opportunity for improvement in student success on this outcome is in motivating students to submit and revise the assignment.

## 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?

This course appears to be meeting the needs of the students well. There were no surprises in the data.

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

This information will be shared with the Life Science Faculty at a regular department meeting.

3. Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Assessment Tool	The method of evaluating the lab skills (outcome 4) will be modified to better evaluate this outcome. A rubric will be used to assess formal laboratory reports (see attached).	The assessment method proposed in the original master syllabus was inappropriate and inadequate.	2015
Other: Lecture Material	The lecture material will be slightly modified to emphasize the aspects of endocrine function and mechanical efficiency that were found to be deficient in terms of student performance.	Students performed inadequately on these questions, indicating they were deficient in their understanding of these topics.	2015

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

5.

### III. Attached Files

[Formal Lab Report Grading Rubric](#)

**Faculty/Preparer:** Marvin Boluyt **Date:** 06/22/2015

**Department Chair:** Anne Heise **Date:** 07/07/2015

**Dean:** Kristin Good **Date:** 07/08/2015

**Assessment Committee Chair:** Michelle Garey **Date:** 08/24/2015