

Course Assessment Report
Washtenaw Community College

Discipline	Course Number	Title
Physics	105	PHY 105 03/28/2024- Conceptual Physics
College	Division	Department
Math, Science and Engineering Tech	Math, Science and Engineering Tech	Physical Sciences
Faculty Preparer		Weishu Bu
Date of Last Filed Assessment Report		07/16/2020

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

Fall 2019

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

Students met the standard of success with more than 70% students scoring 70% or higher in both assessments for the outcome:

Newtonian Mechanics – 87 % - Standard Met

Heat – 100 % - Standard Met

Vibrations and Waves – 100 % - Standard Met

Electromagnetism and Light – 100 % - Standard Met

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

The report stated that multiple semesters were going to be assessed over a two-year period, to increase the number of students assessed. However, enrollment has increased, two years are not necessary to get a good sample of students. The master syllabus will be revised to indicate that change.

II. Assessment Results per Student Learning Outcome

Outcome 1: Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.

- Assessment Plan
 - Assessment Tool: Topic specific outcome-related exam questions
 - Assessment Date: Fall 2021
 - Course section(s)/other population: All sections starting Fall 2021 for two years.
 - Number students to be assessed: All students
 - How the assessment will be scored: Departmental rubric will be used to score the exam.
 - Standard of success to be used for this assessment: 75% of the students who take the exam will score 70% or greater.
 - Who will score and analyze the data: Lead instructor

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)
2023	2023	

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

# of students enrolled	# of students assessed
58	56

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.

Of the 58 students registered for the classes, two students dropped or withdrew from the course or didn't take the assessments. One student was from winter 2023 DL section and the other was from winter 2023 F2F section. Data was only collected in two semesters, because enrollment has nearly doubled since the last assessment which provides equivalent data as a two-year period.

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 students present in four sections were assessed including two online sections (DL) and two face-to-face day sections.

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

The students were given multiple-choice questions that were used to identify the concepts in mechanics, state of matter, heat and waves, as well as electricity, magnetism, and light. In each of the areas, the students were asked to identify the concepts and principles. Each question was worth two points: the students would receive two points for selecting the correct answer and zero points if they didn't select the correct answer.

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

Met Standard of Success: Yes

The department exams asked the students to identify the principles and concepts in mechanics, state of matter, heat and waves, as well as electricity, magnetism, and light. The standard of success was '75% of students will score 75% or higher'. As 56/58 students (97%) scored 75% or higher, the standard of success was met. The standard of success was increased from stated criteria of '75% of students will score 70% or higher' to '75% of students will score 75% or higher.' This will also be changed in the master syllabus revision for future assessment.

The number of students who met the standard of success for each unit of the test were as follows:

Mechanics: 55/56 students (98%)

State of Matter, Heat, and Wave: 55/56 students (98%)

Electricity, Magnetism, and Light: 55/56 students (98%)

All areas had high performance and met the standard for 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 and met the standard of success for both assessments in the outcome. Note: The standard of success was increased from stated criteria of '75% of students will score 70% or higher' to '75% of students will score 75% or higher.' This will also be changed in the to master syllabus revision for future assessment.

For assessment 1, 98% of assessed students scored 75% and higher on the assessment test.

For assessment 2, 91% of assessed students scored 75% or higher on the lab exercises.

The success rates were similar for online and face-to-face sections, as well as Open Educational Resources (OER) and non-OER sections as attached data shows.

Overall, the class is ensuring that students are learning the concepts and principles which are required in the course, since each area of the outcome was met at a very high success rate.

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.

Even though the outcome was met with great success, the course content and labs will continue to be evaluated to ensure we are meeting the needs of our students and transfer universities. The department will continue to improve and expand the newly implemented OER used in all formats of this course.

Outcome 1: Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.

- Assessment Plan
 - Assessment Tool: Topic specific lab exercises
 - Assessment Date: Fall 2021
 - Course section(s)/other population: All sections starting Fall 2021 for two years.
 - Number students to be assessed: All students
 - How the assessment will be scored: Departmental rubric
 - Standard of success to be used for this assessment: 75% of the students who take the exam will score 70% or greater.
 - Who will score and analyze the data: Lead instructor
1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
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2023	2023	
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2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
58	53

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.

Of the 58 students registered for the four sections of the classes taught in the Fall and Winter 2023, five students dropped or withdrew from the course, or stopped attending the class. Four students were from winter 2023 DL section, one student was from winter 2023 face-to-face section. Data was only collected in two semesters, because enrollment has nearly doubled since the last assessment which provides equivalent data as a two-year period.

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 students present in four sections were assessed including two online sections (DL) and two face-to-face day sections.

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

The laboratory exercises were scored using an answer key. See attachment.

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, 53/58 students (91%) scored 75% or higher on the lab exercises, meeting the standard of success. The standard of success was increased from the stated criteria of '75% of students will score 70% or higher' to '75% of students will score 75% or higher.' This will also be changed in the master syllabus revision for future assessment.

The number of students who met the standard of success for each unit were as follows:

Mechanics: 47/53 students (89%)

State of matter, heat, and wave: 46/53 students (87%)

Electricity, magnetism, and light: 45/53 students (85%)

All areas had high performance and met 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 and met the standard of success for both assessments in the outcome. Note: The standard of success was increased from stated criteria of '75% of students will score 70% or higher' to '75% of students will score 75% or higher.' This will also be changed in the to master syllabus revision for future assessment.

For assessment 1, 98% of assessed students scored 75% and higher on the assessment test.

For assessment 2, 91% of assessed students scored 75% or higher on the lab exercises.

The success rates were similar for online and face-to-face sections, as well as Open Educational Resources (OER) and non-OER sections as attached data shows.

Overall, the class is ensuring that students are learning the concepts and principles which are required in the course, since each area of the outcome was met at a very high success rate.

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.

Even though the outcome was met with great success, the course content and labs will continue to be evaluated to ensure we are meeting the needs of our students and transfer universities. The department will continue to improve and expand the newly implemented OER used in all formats of this course.

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 intended change to collect data over four semesters in two years was not implemented. Data was only collected in two semesters because enrollment has nearly doubled since the last assessment which provides the equivalent data of a two-year period.

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 assessment data indicates that we are meeting the needs of students since all standards of success were met. Having reviewed the data from different sections, it is clear that students scored very similarly across each section regardless of the format.

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

This information will be shared at the next department meeting.

- 4.

Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Outcome Language	Create two outcomes each with its own assessment instead of one outcome and two assessments.	To be able to analyze the lecture material and lab material separately.	2024
Assessment Tool	The assessment will be given to all students who are taking the course (Fall and Winter semester) over a one-year period.	We are reducing the data collection period from two years to one year, because enrollment has nearly doubled since the last assessment which provides the equivalent data as a two-year period.	2024
Assessment Tool	The standard of success was increased from stated criteria of '75% of students	Based on the collected data, the previous standard was not well-	2024

	will score 70% or higher' to '75% of students will score 75% or higher.'	aligned with students' results.	
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5. Is there anything that you would like to mention that was not already captured?

Thanks to Molly Ledermann for helping with the smooth transition to OER, and big thanks to our Department Chair Suzanne Albach for helping with the whole assessment process.

III. Attached Files

[PHY105 assessment test](#)

[PHY105 assessment result data](#)

[PHY105 assessment lab key](#)

Faculty/Preparer: Weishu Bu **Date:** 04/05/2024

Department Chair: Suzanne Albach **Date:** 04/05/2024

Dean: Tracy Schwab **Date:** 04/08/2024

Assessment Committee Chair: Jessica Hale **Date:** 03/14/2025

Course Assessment Report
Washtenaw Community College

Discipline	Course Number	Title
Physics	105	PHY 105 01/16/2020- Conceptual Physics
Division	Department	Faculty Preparer
Math, Science and Engineering Tech	Physical Sciences	Robert Hagood
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?

No

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

3.

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

5.

II. Assessment Results per Student Learning Outcome

Outcome 1: Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.

- Assessment Plan
 - Assessment Tool: Departmental final exam
 - Assessment Date: Winter 2012
 - Course section(s)/other population: all
 - Number students to be assessed: all
 - How the assessment will be scored: Departmentally-developed rubric
 - Standard of success to be used for this assessment: 70% of the students completing the assessment will receive a score of 70% or greater.

- Who will score and analyze the data: Department

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		

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

# of students enrolled	# of students assessed
31	18

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

There were 30 students registered for the course, but at the time of the assessment, the end of the Fall 2019 semester, only 18 students were in the classes as they were assessed. These were all the students who were still active in the class, the others had stopped being active in the class.

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 students in all sections of PHY 105 for the Fall 2019 semester were given the assessment test.

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

All students were given a departmental exam at the end of the semester. The exam was 10 multiple-choice questions that had the students “Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.” This gave the department a chance to see if the course was providing the students a chance to identify and recognize the concepts. Each question was scored as either a 1 – for right answers or a 0 – for incorrect answers. The test was score by the Lead Instructor for the course.

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, looking at the average for all the students and the full assessment exam, the students were able to demonstrate successfully that they did achieve the standard defined by the Master Syllabus. Each individual area of the students learning outcome was also successfully reached.

Newtonian Mechanics – 87 % - Standard Met

Heat – 100 % - Standard Met

Vibrations and Waves – 100 % - Standard Met

Electromagnetism and Light – 100 % - Standard Met

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

The students were able to display, across the board, that they did learn how to identify and recognize the concepts of the learning outcome. Each concept was met with an average score well beyond the standard of 70% completion.

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 process which is being used to work with the students seems to be successful for the students. The department needs to make sure that as technology and information changes, the department needs to stay fluid with how the material is presented to the students, finding new ways to present material to the students to continue helping the students learn and reach the standards of success that was displayed with this assessment.

III. Course Summary and Intended Changes Based on Assessment Results

1. Based on the previous report's Intended Change(s) identified in Section I above, please discuss how effective the changes were in improving student learning.

There was no 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?

No, there was no surprise, the students are asked to identify and recognize the concepts of physics, and how the class is being currently presented seems to be reaching the desired goals.

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

The full report will be shared with all departmental faculty members at the January 2020 department meeting.

4.

Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Assessment Tool	The assessment will be given to all students who are taking the course (Fall and Winter semester) for a two-year period.	The assessment tool did seem to work fine, but we were limited with the amount of data that was collected. Since the course basically offers one section a semester, all students who are taking the course will be assessed each semester for a two-year period. This will then allow enough data to be gathered to give a more well round assessment of the course.	2021

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

6.

III. Attached Files

[Assessment Exam](#)

[Assessment Data](#)

Faculty/Preparer:

Robert Hagood **Date:** 01/22/2020

Department Chair:

Suzanne Albach **Date:** 01/22/2020

Dean:

Victor Vega **Date:** 01/23/2020

Assessment Committee Chair: Shawn Deron **Date:** 07/15/2020