

**Course Assessment Report  
Washtenaw Community College**

Discipline	Course Number	Title
Physics	100	PHY 100 01/13/2022- Physics for Elementary Teachers
College	Division	Department
	Math, Science and Engineering Tech	Physical Sciences
Faculty Preparer		Robert Hagood
Date of Last Filed Assessment Report		08/27/2018

**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

Assessed during the Fall 2017 semester

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

The report shows that the course was providing the students with the requirements per the Master Syllabus.

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, to increase the number of students assessed.

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

Outcome 1: Identify major components of mechanics, heat, sound, electricity and magnetism.

- Assessment Plan
  - Assessment Tool: Department exam
  - Assessment Date: Fall 2018
  - Course section(s)/other population: All

- Number students to be assessed: All
- How the assessment will be scored: Answer key
- Standard of success to be used for this assessment: 80% of students will score 70% or higher
- Who will score and analyze the data: Departmental 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)
2021		

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

# of students enrolled	# of students assessed
43	39

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 42 students registered for the class, three students did not complete the second departmental exam, as these students had either stopped attending the class or just did not take the final departmental exam. The courses were taught virtually, so this did create issues with student attendance.

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.

There were two classes, both taught virtually, during the Fall 2021 semester. Both the day and evening sections of the class were given the department assessment exam.

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, heat, states of matter, electricity, and magnetism. In each of the areas, the students were asked to identify the concepts and principles. Each question was worth 2 points: the students would receive 2 points for properly selecting the correct answer and zero points if they did not 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, heat, states of matter, and electricity and magnetism. The standard of success was "80% of students will score 70% or higher". As 37/39 students (94.9%) scored 70% or higher, the standard of success was met.

For each category the average scores were:

1. Mechanics - 84.3 %
2. Heat - 88.5%
3. States of Matter - 93.6%
4. Electricity & Magnetism - 92.9%

All areas had high performance.

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

Overall, the class is making sure that students are learning to identify the concepts and principles which are presented in the course. Each area of the outcome was met at a very high level. Mechanics, which covers a broad range of concepts and principles was the lowest scoring area, with an 84.3%. This shows that the course conveys the material to the students successfully. All other areas of the outcome met the criteria for 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.

Questions related to sound will be added for future assessment. Otherwise, since the outcome was met with great success, the course content will be maintained. In the future, to continue to improve the course, the department will need to look for new and innovative methods of delivery of the material. Examples of these include more hands-on activities and using virtual methods of learning for the students to help with their comprehension of the material.

Outcome 2: Develop and teach a lesson plan for elementary age children based on one of the principles of physics.

- Assessment Plan
  - Assessment Tool: Lesson plan
  - Assessment Date: Fall 2018
  - 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 students will score 70% or higher
  - Who will score and analyze the data: Departmental 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)
2021		

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

# of students enrolled	# of students assessed
43	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.

For the two sections of the class taught in the Fall of 2021, all students were assigned a project to develop a Lesson Plan and then to present their lesson plan using a PowerPoint Presentation. Both courses were taught virtually and seven students from the two sections did not complete their presentation. Hence the reason for the difference in the numbers.

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.

Every student who was enrolled in the two sections was included in this assessment. But as stated above, seven students did not complete their project.

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

The students were to select a topic or concept in the world of physics. From this concept, the students were then asked to develop a Lesson Plan, as if they were a teacher, and then using their lesson plan, the students were asked to present their concept as if they were teaching their students. Since the classes were taught virtually, each student developed a PowerPoint and presented their PowerPoint to the class. These presentations were then reviewed by students in the class. Each student reviewed the other students' presentations and gave feedback to the other students as part of the project.

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, the lesson plans and presentations were highly successful. The faculty scored these presentations and 33/36 students (91.7%) scored 70% or higher. This shows that the students were able to:

1. Learn the concept of physics which they selected.
2. Develop a lesson plan about the concept.
3. Present the concept as if they were a teacher.

Overall, the lesson plans the students completed were highly successful and demonstrated the growth of the students throughout the semester in their knowledge of physics and education.

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

Overall, this process of having the students develop and present their lessons was a success. When the students were exposed to concepts and principle of physics, it raised their level of interest in physics and allowed them to explore areas of physics that draw the student to their selected topic. When reviewing the results of the assessed outcome, the average score of the students' presentations was 92.4%. This assessment outcome was reached with very strong achievement.

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.

This assessment outcome allowed the students to explore their interests in physics. To continue with the improvement in the course, it would be advisable to increase the amount of lesson plans which the students develop throughout the course. This will help the students to build on their understanding of the concepts and principles in physics, and more importantly, allowing them to share their understanding with the other students in the class and their future students.

### 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.

In the previous assessment, it was advised to run the assessment tool through four semesters of the class to gather more data about the effectiveness of the course. But with the pandemic, it was not feasible to accurately assess the course. The first few semesters of virtual learning had a learning curve for the instructors and the course itself. Since the course needed assessing, a plan was developed and executed in one semester. It is believed that the data gathered was sufficient to show how the course is doing with the education of the students.

In the future, the course will be assessed over more than one semester to gather more data about the course.

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?

There were no surprises about the course and its effectiveness for the students. This course is designed for future elementary teachers. The students are highly motivated students who understand why their education is important. The course itself has been designed to meet the needs of these students and has been refined over 20 plus years of the course being offered. The course has found its groove and meets the needs of the students. Of course, this does not mean that the course will not continue to grow. With the advent of new technologies, the course continues to evolve to meet the needs of the students.

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

The assessment data and report will be shared with all full-time department members of the department when the preparer completes the assessment report. Feedback of all full-time department members will be incorporated into the assessment report and input about future assessing tools will be incorporated in the new master syllabus for the course.

4.

Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Assessment Tool	Ensure questions related to sound are included in the assessment tool.	The current assessment tool did not include questions related to sound.	2023
Course Materials (e.g. textbooks, handouts, on-line ancillaries)	Add more hands-on activities and virtual methods of learning to support student in their understanding of content in Outcome #1.	Continuous improvement.	2023
Other: data collection	The assessment tool does seem to be working well, but the amount of data collected needs to be increased, to better explore if the course is meeting the needs of the students. Only two sections of the course being assessed limits the effectiveness of the assessment tool. Gathering more data will allow a more robust understanding of the effectiveness of the course and give a better understanding of the needs of the students. Starting in 2022, all courses offered in the fall semester and the	Currently, only 39 students fully participated in the assessment of the course. On average, 90 students complete the course in an academic year. By gathering more data, more information will be gleaned about how the course is or is not meeting the needs of the students. Basic statistics has shown that the more data points collected, the more robust understanding we have of the causes and effects of any tool or outcome. Hence, by gathering more data, the assessment tool should give a	2022

	winter semester will be assessed. This will increase the number of data points for the assessment of the course.	better understanding of the course.	
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5. Is there anything that you would like to mention that was not already captured?

6.
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### III. Attached Files

- [Assessment Exam 1](#)
- [Assessment Exam 2](#)
- [Lesson Plan Scoring Rubric](#)
- [Department Exam Scoring Rubric](#)
- [PHY 100 Assessment Exam Data](#)
- [Lesson Plan Scores](#)

**Faculty/Preparer:** Robert Hagood **Date:** 04/05/2022  
**Department Chair:** Suzanne Albach **Date:** 04/12/2022  
**Dean:** Victor Vega **Date:** 04/28/2022  
**Assessment Committee Chair:** Shawn Deron **Date:** 12/23/2022

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

Discipline	Course Number	Title
Physics	100	PHY 100 01/10/2018- Physics for Elementary Teachers
Division	Department	Faculty Preparer
Math, Science and Engineering Tech	Physical Sciences	Robert Hagood
Date of Last Filed Assessment Report		

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

Outcome 1: Identify major components of mechanics, heat, sound, electricity and magnetism.

- Assessment Plan
  - Assessment Tool: Department Exam
  - Assessment Date: Winter 2012
  - Course section(s)/other population: All sections in current semester.
  - Number students to be assessed: All students
  - How the assessment will be scored: Scantron test will be scored against a master test.
  - Standard of success to be used for this assessment: 80% of all students who take the assessment will score at least 70%.
  - Who will score and analyze the data: Full-time Physics 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)
2017		

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

# of students enrolled	# of students assessed
21	21

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.

No difference

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 enrolled were given the assessment tool.

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

Two course exams were given to the students, a Test 1 and Test 2. The first 10 questions from each test were embedded assessment questions. The first test asked students to identify the principle associated with mechanics. The second test asked students to identify the principle associated with heat, sound, electricity and magnetism.

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 the students had an average score of 80.95%, so in that regard, the outcome was met. But within the data, there were areas where the results do not meet the level of a 70% passing rate. Five questions in total did not meet the 70% level; two of the questions were one student away from reaching the level and the third was two students away from the level. With only 21 students taking the assessment, a difference of 1 correct answer would change the results by 4.7%. With razor thin margins, one or two students is tough to justify. But two of the questions were significantly low in the number of students who responded correctly. This could be cause for concern, but with the low number of students taking the assessment, new questions arise. Did the students not learn these topics well, or was the question on the assessment not written well, leading the students to not fully understand the question?

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

Overall, the students are understanding and learning how to incorporate the concepts taught to them in the course. This is reflected in the strength of the assessment results.

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.

This is the crux of the assessment. Based on the results of the assessment, some questions arose as to why a couple of the assessment questions did not reach their desired level of achievement. The one area that was of concern was momentum, a concept that should not be very difficult for the students to understand and one which the students seem to understand in the course itself, based on their work during labs and on quizzes given on the topic. So was the question written poorly, did students just not grasp the concept or is a large sample size needed to fully understand the root of the assessed concept? The assessor believes that a large sample size, for this concepts and all concepts which the assessment is trying to verify, needs to be gathered to fully understand if the students are mastering all the concepts and learning the outcomes.

When the master syllabus is updated, included in the new syllabus will be a plan to increase the frequency of assessment for the course. To this end, instead of relying on one semester of data, data will be gathered from every student who takes the course over four continuous semesters. Hence, we will increase the number of data points for the assessment.

Outcome 2: Develop and teach a lesson plan for elementary age children based on one of the principles of physics.

- Assessment Plan
  - Assessment Tool: Lesson Plan
  - Assessment Date: Winter 2013
  - Course section(s)/other population: All sections
  - Number students to be assessed: All students
  - How the assessment will be scored: Departmentally-developed Rubric
  - Standard of success to be used for this assessment: 70% of the students must score 70% or higher.
  - Who will score and analyze the data: Full-time departmental 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)
2017		

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

# of students enrolled	# of students assessed
21	21

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.

No difference.

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 taking the class were assessed.

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

Each student was required to assemble and present their own lesson plan on a topic in physics.

The lesson plans were scored out of 25 points, this was part of their presentation they did for the class. To receive a score of 25, the lesson plan needed to include the following: 1. Title 2. Grade Level 3. Student Learning Outcome 4. Introduction with background on the topic 5. Detailed step-by-step procedures which were followed by students 6. Conclusion with follow-up activities or questions.

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 the students did very well. With a couple of exceptions, all students recieved a score of 25 points. They included in their lesson plan all six sections which were required. The students who did not have all aspects of the requirements each only missed one requirement. So the overall average of the lesson plans for the students was 24.7 points. The students more than met the standard of success for the course.

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

This section of the assessment was a great success. The students were able to show a mastery of a topic in physics and develop a method of conveying this information to elementary students.

- 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 assessor is not sure that this area of the assessment needs to be improved or changed. All students in the course demonstrated an understanding of developing a lesson plan and presenting said lesson plan as if they were teaching an elementary class. As with the assessment questions, more data points would be good to verify that the students are understanding the process of development and presentation of a lesson plan. So in the updated master syllabus, four continuous semesters of data will be collected from all students taking the course.

## II. Course Summary and Action Plans Based on Assessment Results

- 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?

Overall the course seems to be meeting the learning needs of the students. But the number of students being assessed is small, too small to completely understand if the course is reaching the learning levels that the students need. So changes will be made to the master syllabus.

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

Information will be shared at the next department meeting in April 2018.

- Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Assessment Tool	To ensure that the course is assessed properly and there is not just anomalies for one course of data, data will be collected for four continuous	In basic data analysis, the number of data points must be considered with interpreting the data. The data collected for the	2019

	semesters, increasing the data points for analysis.	assessment was one class of 24 students, so to better understand trends in the data, more data should be collected. In order to achieve this with a course that has a limited number of students in the class every semester, data will be collected over a longer period of time.	
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4. Is there anything that you would like to mention that was not already captured?

5.
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### III. Attached Files

[Scoring Rubric](#)  
[Assessment Test Data](#)

**Faculty/Preparer:** Robert Hagood **Date:** 04/10/2018  
**Department Chair:** Kathleen Butcher **Date:** 05/24/2018  
**Dean:** Kristin Good **Date:** 05/26/2018  
**Assessment Committee Chair:** Shawn Deron **Date:** 08/27/2018

**COURSE ASSESSMENT REPORT**

**Background Information**

1. Course assessed:  
 Course Discipline Code and Number: PHY 100  
 Course Title: Physics for Elementary Teachers  
 Division/Department Codes: MNB
  
2. Semester assessment was conducted (check one):  
 Fall 20\_\_  
 Winter 20\_\_  
 Spring/Summer 20\_\_
  
3. Assessment tool(s) used: check all that apply.  
 Portfolio  
 Standardized test  
 Other external certification/licensure exam (specify):  
 Survey  
 Prompt  
 Departmental exam  
 Capstone experience (specify):  
 Other (specify):
  
4. Have these tools been used before?  
 Yes  
 No

If yes, have the tools been altered since its last administration? If so, briefly describe changes made.

5. Indicate the number of students assessed/total number of students enrolled in the course.  
 36 out of 36, two section of the course were offered in the winter 2006 semester
  
6. Describe how students were selected for the assessment.  
 All students in both courses took the departmental final exam.

**Results**

1. Briefly describe the changes that were implemented in the course as a result of the previous assessment.  
 No previous course assessment.
  
2. State each outcome from the master syllabus that was assessed.  
 Heat and Temperature; Electricity; and Magnetism
  
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.  
 The departmental exam was given to all students in the two course, each questions was a multiple choice question. The students were asked to identify specific topics related to the course objectives, each course outcome had two questions that dealt with that specific concept. Of the three outcomes, the goal was to show that 75% of the students could recognize the specific concept. For all three concepts, the students were able to satisfy the requirements.
  
4. For each outcome assessed, indicate the standard of success used, and the percentage of students who achieved that level of success.  
 For each outcome, 75% of the students were expected to correctly choose the proper answer. Heat and Temperature - 88.5%; Electricity - 91.5 %; Magnetism - 95.5%, theses percentages represent the number of students the got the question correct, demonstrating that the students could recognize the proper concept.

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

COURSE ASSESSMENT REPORT

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

Strengths: The students were able to show that they understood the topics and were able to recognize when to apply the concepts.

Weaknesses: None

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, along with a timeline for these actions.

- 2. Identify any other 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.

Master syllabus

Change/rationale:

Curriculum

Change/rationale:

Course syllabus

Change/rationale:

Course assignments

Change/rationale:

Course materials (check all that apply)

Textbook

Handouts

Other:

Change/rationale:

Instructional methods

Change/rationale:

Other:

Change/rationale:

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 tool helps the department to understand the areas that the students lack understanding. This assessment tool will be modified in the future to better identify areas of weakness of the students understanding.

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

Submitted by:

Name: [Signature]

Date: 2/29/06

Department Chair: [Signature]

Date: 2/29/06

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

**COURSE ASSESSMENT REPORT**

**WASHTENAW COMMUNITY COLLEGE**

Dean: M. Shouse

Date: 7/3/06