**Course Prefix, Number, and Title: PHYS 107, Technical Physics**

**Section Number(s): 1002**

**Department: Science**

**Instructor: Milinda Wasala**

**Academic Year: 2020/2021**

**Semester: Spring 21**

**Is this a GenEd class? Yes**

**Complete and submit your assessment report electronically to your department chair. As needed, please attach supporting documents and/or a narrative description of the assessment activities. You may use as many or as few outcomes as necessary.**

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| **Class/Course Outcomes** | **Assessment Measures** | **Assessment Results** | **Outcome Results Analysis** |
| In the boxes below, summarize the outcomes assessed in your class or course during the last year*.* If this is a GenEd class, include the appropriate GenEd objectives. | In the boxes below, summarize the methods used to assess course outcomes during the last year. Include the criterion you’ll use to judge whether or not students have achieved the expected outcome. | In the boxes below, summarize the results of your assessment activities during the last year. Include your judgement as to whether or not the criterion for student achievement has been met. | In the boxes below, please reflect on this outcome’s results and summarize how you plan to use the results to improve student learning. |
| Outcome #1:  Be able to discuss Newton’s First Law of motion.  Outcome #2:  Distinguish between scalar and vector quantities and give several examples of each. | Assessment Measure:  Ch 2-3 Homework  Quiz 1, 2  Exam 1  Final Exam  Criterion for achievement:  60% of students earned 80% or above in homework 2-3  60% of students earned 60% or above in Quiz 1, 2  60% of students earned 60% or above in exam 1  60% of students earned 55% or above in Final Exam | Results:  83% of students had an aggregate score of 80% or more on Ch 2-3 homework.  97% of students had an aggregate score of 60% or more on quiz 1, 2.  71% of students had an aggregate score of 60% or more on exam 1.  62% of students had an aggregate score of 55% or more on Final Exam.  Criterion Met: Yes | 1. Results Analysis:  First few chapters are mathematically more intensive. Exam results were marginally ahead of expected level.  2. Action Plan:  Discuss more problems. |
| Outcome #3:  Utilize the gravitational acceleration constant “g” in a free fall problem  Outcome #4:  Discuss the significance of Newton's second law of motion.  Outcome #5:  Use the third law of motion to relate action and reaction forces.  Outcome #6:  Distinguish between mass and weight and the weight of an object of given mass. | Assessment Measure:  Ch 4-5 Homework  Quiz 3, 4  Lab 1  Exam 1  Final Exam  Criterion for achievement:  60% of students earned 80% or above in homework 4-5  60% of students earned 60% or above in Quiz 3-4  60% of students earned 80% or above in labs  80% of students earned 60% or above in Exam 1  60% of students earned 55% or above in Final Exam | Results:  65% of students had an aggregate score of 80% or more on Ch 4-5 homework.  95% of students had an aggregate score of 60% or more on quiz 3, 4.  All of students earned 90% or above on lab1.  71% of students had an aggregate score of 60% or more on exam 1.  62% of students had an aggregate score of 55% or more on Final Exam.  Criterion Met: Yes | 1. Results Analysis:  This part of the course is mathematically more intensive. Ch 4-5 results were close to the expected level.  2. Action Plan:  Discuss more problems. Encourage students to use GBC tutoring facilities more. |
| Outcome #7:  Illustrate linear momentum and discuss its significance.  Outcome #8:  Distinguish between kinetic energy and potential energy.  Outcome #9:  State what is meant by angular momentum. | Assessment Measure:  Ch 6-7 Homework  Quiz 5  Exam 2  Final Exam  Criterion for achievement:  60% of students earned 80% or above in homework 6-7  60% of students earned 60% or above in Quiz 5  80% of students earned 60% or above in Exam 2  60% of students earned 55% or above in Final Exam | Results:  72% of students had an aggregate score of 80% or more on Ch 6-7 homework.  90% of students had an aggregate score of 60% or more on quiz 5.  72% of students had an aggregate score of 60% or more on exam 2.  62% of students had an aggregate score of 55% or more on Final Exam.  Criterion Met: Yes | 1. Results Analysis:  This part of the course is mathematically more intensive.  2. Action Plan:  Discuss more problems |
| Outcome #10:  State Newton's law of gravity and describe how gravitational forces vary with distance.  Outcome #11:  Distinguish between atomic number and mass number. | Assessment Measure:  Ch 9,11 Homework  Exam 2  Final Exam  Criterion for achievement:  60% of students earned 80% or above in homework 9, 11  60% of students earned 60% or above in Quiz 6  80% of students earned 60% or above in Exam 2  60% of students earned 55% or above in Final Exam | Results:  69% of students had an aggregate score of 80% or more on Ch 9, 11 homework.  95% of students had an aggregate score of 60% or more on quiz 6.  72% of students had an aggregate score of 60% or more on exam 2.  62% of students had an aggregate score of 55% or more on Final Exam.  Criterion Met: Yes | 1. Results Analysis:  2. Action Plan:  Keep this part of the course same. |
| Outcome #12:  Distinguish between temperature and heat.  Outcome #13:  Describe and calculate density.  Outcome #14:  Compare heat engines and refrigerators.  Outcome #15:  Distinguish between transverse and longitudinal waves.  Outcome #16:  Distinguish between amplitude and frequency modulation. | Assessment Measure:  Ch 15,19 Homework  Quiz 7, 8  Lab 2  Final Exam  Criterion for achievement:  60% of students earned 80% or above in homework 15,19  60% of students earned 60% or above in Quiz 7,8  60% of students earned 80% or above in labs  80% of students earned 60% or above in Exam 2  60% of students earned 55% or above in Final Exam | Results:  79% of students had an aggregate score of 80% or more on Ch 15,19 homework.  74% of students had an aggregate score of 60% or more on quiz 7,8.  All of students earned 90% or above on lab2.  72% of students had an aggregate score of 60% or more on exam 2.  62% of students had an aggregate score of 55% or more on Final Exam.  Criterion Met: Yes | 1. Results Analysis:  2. Action Plan:  Keep this part of the course same. |
| Outcome #17:  State Coulomb's law for electric force and compare it with Newton's law of gravity.  Outcome #18:  Describe magnetic fields and magnetic domains.  Outcome #19:  Discuss the concept radioactive half life and the danger of radioactivity. | Assessment Measure:  Ch 22,23,24,26,33 Homework  Quiz 9  Lab 3  Final Exam  Criterion for achievement:  60% of students earned 80% or above in homework 22,23,24,26,33  60% of students earned 60% or above in Quiz 9  60% of students earned 80% or above in labs  60% of students earned 55% or above in Final Exam | Results:  78% of students had an aggregate score of 80% or more on 22,23,24,26,33 homework.  95% of students had an aggregate score of 60% or more on quiz 9  76% of students earned 90% or above on lab3.  62% of students had an aggregate score of 55% or more on Final Exam.  Criterion Met: Yes | 1. Results Analysis:  2. Action Plan:  Keep this part of the course same. |
| Outcome #20:  **GEN ED, Scientific Reasoning-**  Demonstrate an understanding of the scientific methodologies used in various disciplines | Assessment Measure:  Applicable questions on exams throughout the course  Criterion for achievement:  60% of students with an aggregate score of 60% or better on applicable exam questions | Results:  70% of students had an aggregate score of 60% or more on applicable exam questions  Criterion Met: Yes | 1. Results Analysis:  Expected result  2. Action Plan: |
| Outcome #21:  **GEN ED, Scientific Reasoning-**  Effectively interpret and apply scientific principles and concepts | Assessment Measure:  Applicable questions on exams throughout the course  Criterion for achievement:  60% of students with an aggregate score of 60% or better on applicable exam questions | Results:  70% of students had an aggregate score of 60% or more on applicable exam questions  Criterion Met: Yes | 1. Results Analysis:  Expected result  2. Action Plan: |
| Outcome #22:  **GEN ED, Scientific Reasoning-**  Apply scientific reasoning to the evaluation, analysis, or interpretation of models and theories developed in the sciences | Assessment Measure:  Applicable questions on exams throughout the course  Criterion for achievement:  60% of students with an aggregate score of 60% or better on applicable exam questions | Results:  80% of students had an aggregate score of 60% or more on applicable exam questions  Criterion Met: Yes | 1. Results Analysis:  Expected result  2. Action Plan: |
| Outcome #23:  **GEN ED, Scientific Data Interpretation:**  Effectively apply mathematical principles and quantitative  methods to collect and analyze scientific data | Assessment Measure:  Applicable questions on exams and labs throughout the course  Criterion for achievement:  60% of students with an aggregate score of 60% or better on applicable exam questions | Results:  80% of students had an aggregate score of 60% or more on applicable exam questions as well as labs.  Criterion Met: Yes | 1. Results Analysis:  Expected result  2. Action Plan: |
| Outcome #24:  **GEN ED, Scientific Data Interpretation:**  Utilize the scientific method to arrive at informed conclusions | Assessment Measure:  Applicable questions on exams and labs throughout the course  Criterion for achievement:  60% of students with an aggregate score of 60% or better on applicable exam questions | Results:  60% of students had an aggregate score of 60% or more on applicable exam questions as well as labs.  Criterion Met: Yes | 1. Results Analysis:  Expected result  Follow up:  This was a hybrid course due to the COVID-19 restrictions. This student group usually prefer in-person courses rather than online courses. Even though the assessment criterion achieved for each assessment measure, I believe some changes should be done on the syllabus and the structure of the course. More technical and applied aspects should be incorporated. More simulations related labs as well as hands-on laboratory activities could be added advantage to this course. Also, students should be encouraged to use the tutoring facilities. |

**Notes:**

I have reviewed this report:

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Department Chair Dean

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Vice President of Academic Affairs and Student Services

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