Course Summary Report

Year 2013 - 2014 **Period** Annual

Division Science **Dept** PHYSIC **Course** PHYSIC-101

Tools

Course SLOs

Note: Course SLO Summary Evaluation Form is available.

#	SLO Statement	# of Students Assessed	# of Students who Met SLO	% of Students who Met SLO
1	Students will demonstrate an understanding of basic, physical concepts by correctly describing and identifying these concepts.	347	317	91.35%
2	Given new situations, by applying the basic scientific principles, students will correctly solve simple problems by the application of the concepts of physics.	347	308	88.76%
3	Also, given a particular laboratory physical objective, students will correctly construct physical systems, learn to use and manipulate laboratory apparatus, and correctly make and analyze measurements of these physical systems.	350	314	89.71%

1 Assessment Methods & Criteria

- For SLO #1 and SLO #2, for each of the five semester tests that were taken, a percentage of how many students scored within the ranges 100%-85%, 85%-70%,70%-55%, 55%- 45%, and 45%-0 was calculated to represent the students' ability to not only understand the basic concepts, but also to be able to solve a variety of physical situations. For SLO #3, a percentage of how many students had lab report averages fa lling within similar ranges was taken to represent the students' ability to assemble, use, and analyze physical systems."Good enough": A percentage between 55% and 70% for both the test averages and the lab report/lab notebook averages. Rubric: Exceptional: A test or lab score higher than 85% Meets most standards: A test or lab score between 70% and 85% Good enough: A test or lab score between 55% and 70% Meets some standards: A test or lab score between 45% and 55% Does not meet standards: A test or lab score less than 45% (PHYSIC-101-03 for 2014SP)

3 Reflection(s)

- Overall, 89.1% of the students had test averages "good enough" or above; this percentage is satisfactory. Also, overall, 83.6% of the students had lab report averages "good enough" of above; this percentage is satisfactory; test percentages were a bit lower th an Fall 2013, and a number of students fa iled to submit lab reports, making thelab SLO success rate significantly lower than Fall 2013. By and large, students seemed to do relatively well in the general questions about identifying and describing basic physical concepts, but seemed to have difficulty in distinguishing concepts with similar-sounding terminology or with similar but related physical properties, particularly when the terms relating these concepts may have been incorrectly used prior to taking this Physics course. Further, misconceptions about certain physical concepts seem difficult to change, even in light of repeated, correct presentations of these concepts together with a discussion of the possible associated misconceptions that often arise. Students seemed to generally have more difficulty in the application of physical law to solve various problems, as opposed to just being able to identify and describe these physical concepts and phenomena; such critical thinking skills are difficult to develop, particularly with beginning science students, and when this may be the first such applications experience that beginning students encounter. Since lab reports are not test situations, students generally have ample opportunity (usually one to two weeks) to complete their reports and/or lab notebooks; also, the students generally collaborate with their peers and lab partners to be able to better understand the lab and its analysis. As a result, the lab percentages usually tend to be high compared to the tests. On average, students seem to learn quite a lot from the labs, since the lab experiment provide the students a hands-on opportun ity to make close connections between theory and the real, physical world, and to be able to directly apply the physical concepts and principles discussed in lecture. The formation of small study groups in the classroom and/or in the lab environments and/or in the student success center would encourage collaborative learning reinforcement of basic physical concepts and of problem-solving skills. Also incorporating more visual aids, such as providing more lecture demonstrations, and using video projections of the text-specific DVD materials and other on-line resources to display more examples of the relationship of physical concepts to everyday phenomena, and how the application of physical concepts can solve various physical problems, may improve outcomes; further, use of self-testing and material review software may give the students more practice in problem-solving and conceptual understanding of the physics involved; additionally, showing students current physics and general science discoveries through internet links to various active science research sources such as the Large Hadron Co llider at CERN, Fermilab, Bell Labs, NASA, Argonne, Sandia, Brookhaven, or Los Alamos National Labs may also improve outcomes. With the aid of the Physics/Astronomy department's newly-acquired set of laptops, students have had and will continue to have an opportunity to perform web-related Physics/ Astronomy lab exercises and observe a variety of unique and difficult-to-perform Physics/ Astronomy demonstrations, together with having the opportunity to make live links with various Physics/Astronomy facilities performing ongoing experiments, physical observations, and measurements in Physics. These supplementary activities might generate a higher level of student participation and interest, and improve student critical-thinking skills. Further, use of a designated Supplemental Instruction (51} leader for the class may improve student learning and performance. At present, because this assessment procedure is new to the department, there are no plans to change the assessment method and/or criteria; when several assessments have been made over several cycles, it will be easier to decide whether the methods need to be modified
(PHYSIC-101-03 for 2014SP)
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(PHYSIC-101-04 for 2014SP)
- Overall, about 90% of the students had test averages "good enough" or above; this percentage is satisfactory. However, more needs to be done to create a successful environment where more students achieve above a70%. Also, overall, about 96% of the students had lab report averages "good enough" or above; this percentage is satisfactory. • Because there is a large body of research that suggests that question asking is the most fundamental element to engage the critical thought process of the learner, new strategies are utilized to create an environment where students become comfortable to ask . questions. • Thus I use a Socratic approach to learning and combine it with free response technologies to help fill in learning gaps. My research has shown that that inquiry based learning helps to close the gap between the strongest and weakest students. Clickers are incorporated to encourage students' participation. However, the challenge faced is the availability of the equipment and computers in the classroom that would bring a hands-on feel to the classroom. It also takes time to change the mindset students are used to and get them used to switching from a "consumer" style of learning to a Socratic style of class interaction. • By and large, students seemed to do relatively well in the general questions about identifying and describing basic physical concepts, but seemed to have difficulty in distinguishing concepts with similar-sounding terminology or with similar but related physical properties, particularly when the terms relating these concepts may have been incorrectly used prior to takiQg this Physics course. Inquiry Based Learning would help to change any misconceptions about certain physical concepts. Doing so would stimulate the visual aspect oflearning adding directly to the learners' experience. • The classroom performance is relativity good, however, more can be done and should be done. It is clear that we must begin to think about how to modernize our classroom to suit today's needs. I found using clickers to track participation and virtual web interaction helpful in improving classroom participation and performance but we are limited since there are no computers in the classroom that every student could have a hands-on feel to learning. • Since lab reports are not test situations, students generally have ample opportunity (usually one to two weeks) to complete their reports and/or lab notebooks; also, the students generally collaborated with their peers and lab partners to be able to better understand the lab and its analyses. As a result, the lab percentages usually tend to be high compared to the tests. On average, students seem to learn quite a lot from the labs, since the lab experiments provide the students with a hands-on opportunity to make close connections between theory and the real, physical world, and to be able to directly apply the physical concepts and principles discussed in lecture. • The formation of small study groups in the classroom and/or in the lab environments and/or in the student success center would encourage collaborative learning and reinforcement ofbasic physical concepts and problem-solving skills. Also it would help to incorporate more visual aids, such as providing more lecture demonstrations, and using videop_rojections of the text-specificDVD materials and other on-line resources to display more examples ofthe relationship of physical concepts to everyday phenomena. It would help students to make connections with how the application of physical concepts can solve various physical problems. This will improve overall outcomes; • Further, the use of self-testing and material review software may give the students more practice in problem-solving and conceptual understanding of the physics involved; • The use of a designated Supplemental Instruction (SI) leader for the class may improve student learning and performance. • These supplementary activities might generate a higher level of student participation and interest, and improve student critical thinking skills. At present, because this assessment procedure is new to the department, there are no plans to change the assessment method and/or criteria; when several assessments have been made over several cycles, it will be easier to - ·---- decide whether the methods need to be modified.
(PHYSIC-101-05 for 2014SP)

12 Section(s) Reporting

2 Section(s) Not Reporting