Xi'an Jiaotong-Liverpool University
西交利物浦大學

Product Used MasteringPhysics
Course Name Physics
Credit Hours Five

Textbook in Use

Physics for Scientists and Engineers with Modern Physics, 4/e, Douglas C. Giancoli

Course Information

Course Background

This is a first year undergraduate course for engineering students. These students are typically strong in mathematics and physics. Their challenge is language as this course is offered in English. Most of the time I engage in bilingual teaching to help students better understand what is being taught. I also conduct lab lessons and give them reference books to aid them in their comprehension. Students are encouraged to read their textbook before class. Lecture time is spent on concept explanation, problem-solving, and sometimes demonstration experiments to show students physics concepts and applications.

As Xi'an Jiaotong–Liverpool University is a fairly new school, this course—which is offered only in the second semester—started with about 100 students every year. However, with an increase in the cohort size, I am expecting around 700 students in the coming semester.

Assessment

16 % Lab
19 % Coursework (MasteringPhysics)
65 % Final examination

Course Implementation

To ease the transition to MasteringPhysics, I started offering a mix of paper-based homework and MasteringPhysics homework two years ago. Now, I use MasteringPhysics exclusively for all homework assignments. Students have only one attempt per homework and they have to submit their homework by the due dates set. There is no pre-requisite set for the homework though students are encouraged to complete all of them on time.

Results

Every semester, the university surveys students to get their feedback on the courses offered. For my course, I have two specific questions to get student feedback on the textbook and MasteringPhysics. So far, the results have been highly encouraging with the majority of students

saying they like the textbook and MasteringPhysics. This is despite some students having issues with the download speed and the initial hurdle of learning to use the mathematical template within MasteringPhysics. Some reasons given include they like digital learning, MasteringPhysics with its animations make the course more interesting, and MasteringPhysics provides them with an opportunity for self-practice and review.

Prior to using MasteringPhysics, it took me about two days to manually grade students' weekly homework. With MasteringPhysics, students get their results immediately after they submit their homework. Another benefit of using MasteringPhysics is it reduces the possibility of copying. Many of the questions have variables that change and are different for each student. (Pearson terms these questions algorithmically-generated questions.) This makes it almost impossible for students to copy from each other.

As the university follows the British grading schema where grades are maintained at an average of 60 marks, it is not possible to compare whether student results have improved after using MasteringPhysics. However, more students are submitting their homework which contributes to 19 per cent of their overall grades.

Conclusion

I would certainly continue using MasteringPhysics as it offers students a refreshing way to learn physics. With self-practice problems for students and its ability to offer immediate feedback, students are also more motivated to learn. In addition, it has definitely cut down on the time I spent grading student homework.

Submitted by Dr. Hao Yu, XJTLU (2012)