UNIVERSITY OF PUERTO RICO
RIO PIEDRAS CAMPUS
COLLEGE OF NATURAL SCIENCES
DEPARTMENT OF PHYSICS
UNDERGRADUATE PROGRAM

Title: Laboratory for University Physics II

Code: PHYS 3014

Number of Credits: 1

Prerequisites: PHYS 3012 taken concurrently

Corequisite: PHYS 3012

**Description**

These are the laboratories courses that accompany the lecture courses PHYS 3012 Three hours of laboratory work per week.

**Objectives**

The student will support the Objectives of the P3012 class by showing the connection between theory and experiment.

**Course Content**

| Topic | Assigned time (hours) |
|---|---|
| 1. Introduction. Safety rules. | 3 |
| 2. Moment of Inertia | 3 |
| 3. Archimedes Principle | 3 |
| 4. Simple Harmonic Motion | 3 |
| 5. The Spiral Spring | 3 |
| 6. Resonant Standing waves | 3 |
| 7. Electric Field | 3 |
| 8. Resistors in series and parallel | 3 |
| 9. Lab Exam | 3 |
| 10. Current and Ohm's Law | 3 |
| 11. DC Circuits and Kirchhoff's Rules | 3 |
| 12. RC Circuit | 3 |
| 13. Magnetic Field | 3 |
| 14. Lab Repositions | 3 |
| 15. Final Projects | 3 |
| Total hours | 45 contact hours |

**Instructional Strategy**

The sections lecture class and laboratories are coordinated so that, although different professors give the instruction, students receive basically the same material. As well, the lecture and laboratory are coordinated with each other so that the student is introduced to the interaction between theory and experiment. At present, one professor acts and coordinator of the lecture and the laboratory.

Coordination of the lecture involves meeting periodically with the lecturers to assure that a uniform progress is made and to make adjustments in the schedule. This is necessary due to the many unexpected interruptions in the schedule with occur in Puerto Rico...Hurricanes, strikes, etc.

Coordination of the laboratory is a more complex situation. Most of the laboratory sections as given by Graduate Students who are Teaching Assistants. We have found that they need considerable training in how to present the material. This is accomplished by having them work through each laboratory prior to giving their class. This is done under the supervision of the coordination, once a week, in a three hours training period. The strategy of instruction is to combine, lecture, and laboratory experiment, audiovisual material, and demonstrations to convey the content of the course.

The students are with assigned homework problems from the textbook to give them experience in problem solving and prepare them for the examinations.

**Minimum Require Facilities**

Laboratory room, PC Computer, printer, interfaces and sensors, and laboratory equipment.

**Student Evaluation**

Students do individual laboratory reports on the experiments. In addition students take one lab exam and discussion of final project.

**Grading System**

Standard A to F Grading System, based on lab reports, quizzes, exam and final project. 100-90% = A, 89-80% = B, 79-70% = C, 69-60% = D, 59-0% = F.

**Bibliography**

Giancoli, D. C. 2008. Physics for Scientists and Engineers with Modern Physics, 4/e, Vol. II. Upper Saddle River, New Jersey: Pearson Prentice Hall.

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