PHYS-UA 72  Introductory Experimental Physics II  Spring 2015

Instructors
Section 001: Andre Adler  Office hours: 1:00 - 2:00 p.m. Wednesdays and by appointment  
E-mail: andre.adler@nyu.edu  Room 252 Meyer  
Section 002: Jinting Hang  Office hours: 3:00 - 5:00 pm Fridays  
E-mail: jh3898@nyu.edu  Room 923 Meyer  
Section 003: Zhongxu Zhai  Office hours: 3:00 – 5:00 pm Wednesdays  
E-mail: zz681@nyu.edu  Room 923 Meyer  
Section 004: Joel Newbolt  Office hours: 4:00 - 6:00 pm Mondays  
E-mail: jwn229@nyu.edu  Room 103 Courant

Meeting Times & Places
Lectures (PHYS-UA 72 001):  Mondays, 9:30-10:45 a.m. Meyer 122  
Laboratory (PHYS-UA 72 002):  Mondays, 3:00-6:00 p.m. Meyer 223  
Laboratory (PHYS-UA 72 003):  Tuesdays, 3:30-6:30 p.m. Meyer 223  
Laboratory (PHYS-UA 72 004):  Wednesdays, 9:15 a.m-12:15 p.m. Meyer 223

Texts
Lab Experiment Descriptions. Though not a formal text, you should regard them, collectively, as the principle text for the course. They are available by going to  
http://physics.nyu.edu/~physlab/GenPhysI_PhysII/phys2.html


Python Primer by D. J. Pine, available by going to  
http://physics.nyu.edu/~physlab/Lab_Main/PythonMan.pdf.

Course Description
This is the second of two introductory-level laboratory courses. The objectives of these courses are to introduce essential experimental techniques including set-up and operation of basic laboratory equipment, elementary experimental design, statistics and inference, and computational data analysis. Experimental techniques are introduced in the context of classic physics experiments.

Prerequisites & Corequisite
Prerequisite: Introductory Experimental Physics I (PHYS-UA 71).  
Co-requisite: Physics II (PHYS-UA 93).

NYU Classes and email
All lab, homework, and exam scores will also be available on Blackboard. Some announcements will be sent out by email, so please be sure you check your NYU email regularly.
Laboratory
You will have 11 laboratory sessions in which you will perform 10 laboratory experiments. The first meeting of lab will take place the week of February 1st. While you will work with a partner, everyone turns in their own lab report, due one week after the lab. You will also be required to keep a lab notebook. You may continue with the lab notebook with the sheets for carbon copies that you used in Introductory Experimental Physics I last semester. You will turn in the copied pages to your lab instructor after you complete the experiment, but before you leave the lab. In addition, you are required to carefully read the laboratory instructions (available on the course web site) before you attend the lab. To encourage you to do this, a short quiz will be given at the beginning of the lab period. Your performance on the quiz will be factored into the grade on your lab report. All labs are held in the Meyer Building, scheduled according to the table below.

As there are no makeup labs, to make allowances for illness or family emergencies, the lowest lab score of the semester will be dropped.

If you know ahead of time that you must miss a lab, notify your laboratory instructor and lecture instructor a week in advance in order to arrange to do the lab in another section that same week.

Lecture
Lecture serves a number of purposes:
1. Discuss the lab experiments you will perform. This includes a description of the equipment and possible uncertainties. Please read the experiment description for that week, before the lecture.
2. Give you an introduction to the physics of the experiment you will perform in lab that week, or review those topics if they were already covered in Physics II (which I assume you are taking this semester, or had in a prior semester.)
3. Cover the Binomial (chapter 10 in Taylor) and Poisson (chapter 11 in Taylor) distributions.

Homework and Exams
- There are 2 homework assignments.
- There are 2 examinations in class, both for extra credit, and a take-home final exam.

Grading
Lab Notebooks 10%
Lab Reports 65%
Homework 5%
Exam 1 Extra Credit
Exam 2 Extra Credit
Take Home Final Exam 20%
<table>
<thead>
<tr>
<th>Week of</th>
<th>Laboratory</th>
<th>Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 25</td>
<td>No Lab</td>
<td>Exam 1 (Extra Credit)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Binomial Distribution</td>
</tr>
<tr>
<td>Feb 1</td>
<td>Python</td>
<td>Poisson Distribution</td>
</tr>
<tr>
<td>Feb 8</td>
<td>Coulomb Balance</td>
<td>Coulomb Balance experiment and underlying physics</td>
</tr>
<tr>
<td>Feb 15</td>
<td>No Lab</td>
<td>No Lecture</td>
</tr>
<tr>
<td>Feb 22</td>
<td>E Field Mapping</td>
<td>E-Field Mapping experiment and underlying physics</td>
</tr>
<tr>
<td>Mar 1</td>
<td>Oscilloscope</td>
<td>Oscilloscope experiment and underlying physics</td>
</tr>
<tr>
<td>Mar 8</td>
<td>Voltage, Current and Resistance</td>
<td>Current electricity experiment and underlying physics</td>
</tr>
<tr>
<td>Mar 15</td>
<td>Spring Break/No Lab</td>
<td>Spring Break/No Lecture</td>
</tr>
<tr>
<td>Mar 22</td>
<td>RC Circuit</td>
<td>RC Circuit experiment and underlying physics</td>
</tr>
<tr>
<td>Mar 29</td>
<td>Charge to Mass Ratio of an Electron</td>
<td>Charge to Mass Ratio experiment and underlying physics</td>
</tr>
<tr>
<td>Apr 5</td>
<td>Current Balance</td>
<td>Current Balance experiment and underlying physics</td>
</tr>
<tr>
<td>Apr 12</td>
<td>RL Circuit</td>
<td>RL Circuit experiment and underlying physics</td>
</tr>
<tr>
<td>Apr 19</td>
<td>Electromagnetic Induction</td>
<td>Induction experiment and underlying physics</td>
</tr>
<tr>
<td>Apr 26</td>
<td>Magnetic Field of a Circular Coil</td>
<td>Magnetic Field experiment and underlying physics</td>
</tr>
<tr>
<td>May 3</td>
<td>No Lab</td>
<td>Exam 2 (Extra Credit)</td>
</tr>
<tr>
<td>May 10</td>
<td>No Lab</td>
<td>Turn in Take Home Final Exam in Class</td>
</tr>
</tbody>
</table>