2014

341 Modern Physics II Lab

Marco Fatuzzo

Follow this and additional works at: http://www.exhibit.xavier.edu/physics_syllabi_spring_2014

Recommended Citation
http://www.exhibit.xavier.edu/physics_syllabi_spring_2014/17

This Restricted-Access Syllabus is brought to you for free and open access by the Physics Syllabi 2014 at Exhibit. It has been accepted for inclusion in Physics Syllabi Spring 2014 by an authorized administrator of Exhibit. For more information, please contact exhibit@xavier.edu.
Modern Physics II Lab
PHY 341 – Spring 2014

Instructor: Dr. Marco Fatuzzo
Office: Lindner 110
Phone: 745-3621
E-Mail: fatuzzo@xavier.edu
Office Hours: M 10:15 – 11:30, T 12:00 – 1:00, Fr 10:15 – 11:30, or by appointment.

Course Description: In this course you will learn lab techniques that will assist you in further understanding the material covered in Modern Physics II, PHYS 340. This is a one credit hour lab course and is separate from the PHYS 340 lecture with a separate grade. The topics covered in lab predominately complement the lecture, but a few topics are independent material.

Course Objectives: After completing this course, students should:
- Display intellectual curiosity about and intuition into the processes of the physical universe, with emphasis on discoveries post 1895 to present.
- Display critical thinking skills, especially those skills required for the analysis and synthesis of knowledge pertaining to the physical universe, with emphasis on discoveries post 1895 to present.
- Demonstrate proficiency in the principles and techniques of experimental modern physics.
- Have a working knowledge of how to manipulate and interpret complex sets of data.
- Display effective oral and written communication skills especially with regards to communicating scientific theories and models, data, results, outcomes, and proposals.
- Have a greater appreciation for the rigor, meticulousness, and applications of the discussed scientific material.
- Experience the satisfaction of realizing that physics is everywhere in our daily lives.

Course Requirements and Grading:
- Open notebook pre-lab quizzes 10%
- Summary lab reports 20%
- Experimental design assignment 10%
- Open notebook exam 25%
- Notebook review 10%
- Presentations 10%
- Formal lab report 15%

General Rules:
1. No food or drinks are ever allowed in the laboratory.
2. When handling radioactive sources remember to:
   a. Keep your distance
   b. Shorten your time of exposure
   c. Attenuate sources not being used for any extended time with some type of shielding
3. Report any spill or suspected leak of radiation immediately to your laboratory instructor.
4. Wash hands after handling the sources and lead.
5. All radioisotopes must be logged out before use. All radioisotopes must be returned to the proper place before you leave the laboratory, and must be logged in.
6. Be cautious of high voltages required for the photomultiplier tubes, for some of the discharge tubes, and for the x-ray tubes.
7. Do not attempt to operate any equipment without prior instruction on its use, or to repair equipment without prior consultation with an instructor.
Radiation Safety Protocol:
Notify the instructor if you are pregnant, or think you may be pregnant

When using any radioactive sources, be sure to record the following in your lab notebooks:
1. Date and time of experiment
2. Source(s) used during the experiment
   a. Decay scheme and energy of radiation
   b. When appropriate, activity of source (corrected from calibration date)
   c. Radiation levels as measured using the survey meter, corresponding exposure time, and dose (in millirems)

Grading scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>93-100 A</th>
<th>83-86 B</th>
<th>73-76 C</th>
<th>60-66 D</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B+</td>
<td>C+</td>
<td>D+</td>
<td>Below 60 F</td>
</tr>
</tbody>
</table>

Attendance is mandatory. All absences must be made up. When possible, absences should be pre-arranged with the instructor at least one week in advance. Two absences without excuse will result in a failing grade for the course.

Communication. Since we only meet once a week, it is important that we be able to communicate via e-mail or Canvas announcements, and that documents be shared via Canvas. It is your responsibility to monitor your e-mail or Canvas announcements for important information regarding pre-lab assignments, and access posted materials as necessary.

Courtesy: Please leave your cell phones, i-Pods, etc. turned off during class.