PHYS 321 Modern Physics Lab

Syllabus	Fall 2016		
instructed by	William Caudy wcaudy@sfsu.edu	Section 02	TH 231	3:15–6:00 TuTh
		Final Exam	HSS 130	1:30–4:00 Th 12/17
		Office Hours	SCI 386	8:30–9:30 Tu

A course calendar with links to all lessons and homework assignments is found on the PHYS 321 **Course Website:** http://physics.sfsu.edu/~wcaudy/PHYS321fall2016.htm.

You must be taking **PHYS 320** concurrently with PHYS 321 Lab. **PHYS 321 Lab** is a separate 1 unit class from PHYS 320, and you will receive a separate grade. There is a lecture component of 321 where you will have quizzes that count towards 20% of your PHYS 321 grade.

Due to limited space in TH 231, the lab component of this course will be taught by two instructors at different times. Because of this, you cannot expect lab equipment to be left in the same state when you return a week later; it will be used by other students.

You must bring your lab manual, and lab notebook to each lab class. Important details on how to prepare and use your lab notebook can be found in the lab manual, and should be read carefully.

Course Description:

The experiments you will be performing in this class are not trivial. Indeed, several of them earned the experimenters or theorists Nobel Prizes for the newly discovered principles. Unlike the original experimenters, you will not be asked to build the apparatus from scratch...nor is it likely you will earn a Noble Prize for discoveries made in lab! However, there are discoveries to be made: the apparatus may operate in non-standard ways, the lab manual may contain errors, etc. Each week, in addition to the specific topic/experiment under consideration, you should keep the following general ideas in mind. These ideas should be present in your formal lab reports.

1. When were these experiments originally performed, and by whom?
2. What theories of classical physics were challenged by this experiment?
3. What new concepts replaced them?
4. What principles of physics does the apparatus I am using rely on?
   (eg. diffraction, Ohm's Law, Lorentz Force Law, etc.)
   It will be assumed that you understand these principles as a matter of course.
5. What are the sources of error in my experiment, both random and systematic.
6. How can I estimate my error?
7. What methods can I devise to minimize these sources of error?
8. Are my results consistent with (one or more) theoretical expectations?

Grades will be calculated from the three categories below.

Lab Notebooks (40%): Students will work with one or more lab partner. Lab notebooks and lab reports must be composed individually, but should state the name of the partner(s). When working on a given instrument, make sure that each partner has the opportunity to use it. No make-up labs will be held.

Written Lab Reports (40% each): You will have two former lab reports to be types. One will be either Balmer Series or Photoelectric Effect, but I recommend all students attempt the formal for Balmer and redo it for Photoelectric if you get a bad grade. Everyone must to a former for Millikan oil drop.

Quiz (20%): From lecture component.

Grades will be posted on the course website by the last four digits of your student ID.
The grade scale used for this course is:

letter	**F**	**D**	**C–**	**C**	**C+**	**B–**	**B**	**B+**	**A–**	**A**
%	0-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-100

Dates & Policies
For add and drop deadlines refer to the **SFSU 2015 Calendar:** https://apps.sfsu.edu/cgi-bin/student/webcalendar.search?calid=2&previous=Y&keyword=Fall%20%2715

Spring 2015 Final's Schedule: http://www.sfsu.edu/~acadres/final_exams/finalf15.htm

Withdrawal: http://www.physics.sfsu.edu/policy/withdrawal.pdf

Plagiarism: http://www.physics.sfsu.edu/policy/plagiarism.pdf !!!!!Don't do it!!!!!

The Disability Programs and Resource Center (DPRC): Students with disabilities who need reasonable accommodations are encouraged to contact the instructor. The Disability Programs and Resource Center (DPRC) is available to facilitate the reasonable accommodations process. DPRC is located in the Student Service Building and can be reached by telephone (voice/TTY 415-338-2472), by email dprc@sfsu.edu, or visit their website at http://www.sfsu.edu/~dprc

SF State fosters a campus free of sexual violence including sexual harassment, domestic violence, dating violence, stalking, and/or any form of sex or gender discrimination. If you disclose a personal experience as an SF State student, the course instructor is required to notify the [Dean of Students]. To disclose any such violence confidentially, contact:
[The SAFE Place - (415) 338-2208; http://www.sfsu.edu/~safe_plc/]
[Counseling and Psychological Services Center - (415) 338-2208;http://psyservs.sfsu.edu/]
For more information on your rights and available resources: [http://titleix.sfsu.edu]

Physics 321 Lab Schedule – Fall 2016

Wednesday's Lab Group

Week	Lab#	Experiment
Aug 24	Lab 0	Registration
Aug 31	Lab 1	Data Analysis
Sep 7	Lab 2	Radioactive Decay, Counting Statistics
Sep 14 & Sep 21	Lab 3	Spectral Lines, Balmer Series
Sep 28 & Oct 5	Lab 4	Michelson-Morley
Oct 12 & Oct 19	Lab 5	Photoelectric effect, Planck's Constant
Oct 26 & Nov 2	Lab 6	Frank-Hertz
Nov 9 & Nov 16	Lab 7	Charge of electron (Millikan)
Nov 23	No Lab	Thanksgiving
Nov 30 & Dec 7	Lab 7	Charge of electron (Millikan)