PHY 370: Experimental Physics, Fall 2016

Text: *An Introduction to Error Analysis 2nd Ed.(John Taylor)*
Instructor: Dr. Matt Marone Room 243 Science and Engineering Building
Phone 301-2597, e-mail: marone_mj@mercer.edu
Office Hours: 2:00-2:50 MW, outside of these hours please make an appointment. You may email me your questions as well.
Class: MW 3-3:50, T9:25-12:05 SEB 117, 115
Prerequisite: MAT 192 Phy 162
General:
Introduction to experimental techniques including: computerized data acquisition, data analysis, analog electronics and instrumentation. Students will also learn the LabVIEW programming language and how to write simple data acquisition software. We shall also attempt to recreate one or more historical physics experiments such as the photoelectric effect, Frank Hertz experiment, Millikan oil drop experiment, or superconductivity. The experimental project will be related to the development of an experiment that can be used in our introductory laboratory sequence. The nature of experimental work is such that you may find it necessary to work in the laboratory for additional time beyond what is now scheduled. I will be happy to open up the laboratory for you, outside of the regularly scheduled times. Documentation is an important part of experimental science. You are required to keep a record of all experiments you attempt, even if they do not work.

Grades: Your Final class grade will be derived from the following percentages:

LabVIEW Programs and electronics (30%)
Historical Physics Experiment (30%)
Experimental Project (30%)
Lab. Notebook and Documentation (10%)

A (90 and above), B+ (85-89), B (80-84), C+ (75-79), C (70-74), D (60-69) F (below 60)

Lab. Notebook and Documentation:
Keeping an accurate laboratory notebook is very important in experimental work. You must document all your experiments, circuits and programs. Even the things that do not work should be written down for future reference. Should you come up with a new idea or invention, the documentation will be especially important in establishing rights to your invention. Please purchase a laboratory notebook. The Bookstore has a large supply of notebooks that are used for chemistry classes. Notebooks should be bound and have numbered pages. Spaces should be available for signatures, dates and witnesses. Remember that 10% of your grade will come from you ability to keep a good notebook.

Laboratory Reports/Programs: Laboratory reports and computer programs are to be the individual work of the student. You may work together with your lab partner, but the report must be written by you and you alone. The format of the reports will be explained in the laboratory class. **No late laboratory reports or projects will be accepted!**

LabVIEW programs are to be **fully** documented including help information for all front panel items. You will submit the program to me on a disk. I will run your program to see how, and if it accomplishes the required task. Part of the grade assigned for the program will reflect the ease by which the user may interact and use the program for the desired objective ("user friendly"). The logic and organization of the program diagram will also enter into the grade as well as help items and documentation.

Illness: If you are ill and will miss class please contact me. We can make arrangements to make up the missed work and I can inform you what material you need to read. If you are ill, please do not come to class. Students are advised to call or email the Student Health Center (301-2696 or shcmacon@mercer.edu) to report influenza-like symptoms. Students judged to have influenza-like symptoms will be instructed that they should not attend class, avoid contact with others as much as possible, and return to their normal schedule after they are free of fever (100°F or 37.8°C), or signs of a fever without the use of fever-reducing medications.

Honor code: You are bound by the Mercer honor code. The College's academic misconduct policy will be followed. All work, for which a grade is received, must be the **original** work of the **student** without aid or assistance of another party, or any printed and or electronic data/information. Academic misconduct cases will be referred to the honor council and the student will automatically receive a grade of incomplete (IC) pending a ruling by the honor council.

Cell Phone and Pager Usage: Out of courtesy for all those participating in the learning experience, all cell phones and pagers must be turned off before entering any classroom, lab, or formal academic or performance event

Classroom etiquette: You are expected to conduct yourself as a mature student, respectful of your classmates and instructor. You may be asked to leave the room if your behavior is disturbing the instructor or your fellow students. You may use a laptop to take notes or access the e-book during class. Please do not use a computer for any other purpose such as facebook, twitter, myspace, social networking, email, stock trading and the like.

Documented Disability

Students with a documented disability should inform the instructor at the close of the first class meeting or as soon as possible. If you are not registered with Disability Services, the instructor will refer you to the Student Support Services office for consultation regarding documentation of your disability and eligibility for accommodations under the ADA/504. In order to receive accommodations, eligible students must provide each instructor with a Faculty Accommodation Form from Disability Services. Students must

return the completed and signed form to the Disability Services office on the 3rd floor of the Connell Student Center. Students with a documented disability who do not wish to use accommodations are strongly encouraged to register with Disability Services and complete a Faculty Accommodation Form each semester. For further information please contact Disability Services at 301-2778 or visit the website at http://www.mercer.edu/stu_support/swd.htm.

Evaluation forms: In an ongoing effort to improve the quality of instruction, each student enrolled in this course is required to complete an end-of-semester course evaluation, to be administered in class on our last day.

Important Dates

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First Day of Class August 23

Late Registration & Drop/Add August 23-26

Last Day for Late Registration, Drop/Add August 26

Holiday - Labor Day September 5

Fall Break October 6-7

Mid Term October 14

Last Day for Course Withdrawal October 28

Thanksgiving Break November 23-25

Last Class Day December 9

There is no final exam for this class.