PHY103 LAB (sections 10L, 12L, and 13L)
Spring 2015 - Syllabus

Lab meets in 214 Cowley Hall**:** **Thursdays 10L (9:55a-11:55a)**
12L (2:15p-4:15p)
13L (4:25p-6:25p)

Instructor: Dr. Rob Salgado, 116 Cowley
Office Hours: *to be announced in class and on D2L,* by appointment, or stop by my office
Email: **`rsalgado@uwlax.edu`** (please include **`103 Lab`** in the subject line)

Course Content
There will be 11 labs over the course of the semester designed to accomplish these two goals:

1) To solidify your understanding of the principles you learn in the Physics 103 lecture by demonstrating them *experimentally*
2) To help you gain experience with *laboratory techniques* and the *analysis* and *interpretation* of experimental data.

These labs focus on the connection between ***experiment*** and ***theory*** *[a summary of a body of knowledge that… has been supported with repeated testing by experiment and makes new predictions that is subject to more testing by new experiments]*.
Almost all of the labs will emphasize (a) first using basic concepts to make theoretical predictions, followed by (b) performing the experimental test to verify the prediction. To make the theoretical predictions, you will have to do things on a more advanced level than simply "plug numbers into an equation and get the answer". In typical experimental work, the limitations imposed by available measuring equipment compel us to *devise indirect methods* of measuring quantities of interest! Often, this involves applying basic physical laws to derive the appropriate formulas which ***relate the "quantities of interest" in terms of the "quantities we can directly measure."***

Laboratory handouts
When you arrive at lab, you will receive that week's explanatory handout.
An electronic version will then be posted on D2L. These handouts include background info, instructions on how to perform the experiments, sample exam questions, etc…
You are responsible for:

- (If given in advance) Reading through the appropriate section before coming to lab
- Working through the lab during the laboratory period
- Reviewing the handouts *and your notes* prior to each lab exam

You should take notes during the labs; this can be directly on the handouts or in a separate notebook. You should record your experimental setup, results, conclusions, etc.

These notes will **not** be graded, nor will you be required to turn in any lab reports. However, **the lab exams will contain both theoretical and practical problems based entirely on the lab handouts which you have completed**. It is in your best interest to keep accurate notes so that you can study for the exams! And note that the "Sample Exam Questions" contain many *actual* exam questions from previous years' exams.

Attendance and Participation *(required)*
An attendance sheet will be kept, which *you should sign each week.* **Plan for each lab to take the allotted 2 hours.** Some labs may be shorter than that, but you cannot plan for a given lab to let out early. **DO NOT** schedule other appointments during lab time. **DO NOT** work on other items during lab.

Making up Labs
If you cannot attend your regular lab section, you can make up the lab as follows:

- Attend another lab section during the **same** week (but don't make a habit of this). Please **let me know beforehand** (with at least an email) so that I can notify the other lab instructor. When you attend the other lab, be sure to tell the other instructor that you are present, so he or she can pass that information on to me. Be careful though: the lab handouts do vary from instructor to instructor. Since you will be tested on what we did in *my* labs, **it's best to work through *my* lab handout**—or at the very least look over my lab handout while working through the handout of the other instructor. And be sure to go over the relevant sample exam questions from the handouts in extra detail.

"Grading"
Your laboratory grade will be based on two laboratory examinations (one for the first 6 labs, the second for the remaining 5 labs). Each exam will be worth 50% of your laboratory score.

Due to departmental policy (to compensate for variations among lab instructors), at the end of the semester your total laboratory score will be scaled so that the class average is 85% (corresponding to 170/200 with a maximum possible score of 200). Your score will be reported to the Physics 103 lecture instructor, who will [alone] incorporate that score for the laboratory into your overall course grade.

Since attendance and participation is required, 5 points will be deducted from your score for each missed class.

Exams
As mentioned above, there will be two lab exams, each covering roughly half of the semester. The exams are closed-book, closed-notes, and are heavily based on the lab activities you performed. An equation sheet will be provided.

Some exam problems will test your ability to make experimental measurements. Some problems will test your ability to analyze experimental data. Others will test your understanding of the physics involved in the lab experiments that you performed. Others may combine some of the above.

As mentioned above, the "Sample Exam Questions" in the lab handouts contain some actual exam questions from previous years' exams, along with other questions that I think might be good, so be sure to study these questions prior to the exams.

Special Needs
"Any student with a documented disability (e.g., physical, learning, psychiatric, vision, or hearing, etc.) who needs to arrange reasonable accommodations must contact the instructor and the Disability Resource Services Office (165 Murphy Library) at the beginning of the semester. Students who are currently using Disability Resource Services will have a copy of a contract that verifies they are qualified students with disabilities who have documentation on file in the Disability Resource Service Office."
It is the student's responsibility to communicate their needs with instructor in a timely manner.

Religious Observances
Students will be allowed to complete exams or other requirements that are missed because of a religious observance provided arrangements are made *in advance.*

Switching Lab Sections
Due to space constraints, changing lab sections may only occur if there is a mutual swap between sections. If you are interesting to changing to a different lab section, sign up on the sheet posted on the door of 214 Cowley *during the first week of classes*. Include all of the requested information.

PHY 103 Lab Schedule
Spring 2015

RS-sections (Thursday)

Jan 29	lab 01 - Uncertainty & Error Analysis
Feb 5	lab 02 - 1D Motion
Feb 12	lab 03 - Acceleration due to gravity
Feb 19	lab 04 - Vector Addition with Forces
Feb 26	lab 05 - Range Prediction
Mar 5	lab 06 - Force, Mass & Acceleration
Mar 12	LAB EXAM 1 (covering labs 01-06)

(SPRING BREAK)

Mar 26	lab 07 - Centripetal Acceleration & Force
Apr 2	lab 08 - Torque & Equilibrium
Apr 9	lab 09 - Moment of Inertia & Angular Acceleration
Apr 16	lab 10 - Archimedes' Principle
Apr 23	lab 11 - Simple Harmonic Motion
Apr 30	LAB EXAM 2 (covering labs 07-11)