PHY104 LAB Syllabus (sections 18L and 19L)

Lab meets in 214 Cowley Hall**:** **18L Wednesday 12:05p-2:05p**
19L Wednesday 2:15p-4:15p

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 **`104 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 104 lecture by demonstrating them *experimentally*
2) To help you gain experience with *laboratory techniques* in general

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 fact, you will in fact often have to solve physics problems to derive the appropriate formulas yourselves!

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.

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 **<u>not</u>** 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 initial 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.
- All missed labs must be made up within one week of the absence.

There may be other ways to make up labs under exceptional circumstances, but talk to me individually for approval.

Grading
Your laboratory grade will be based on the laboratory examinations and attendance/participation. Each exam will be 40% of your laboratory score, and the remaining 20% will be from attendance and participation. Unexcused absences that are not made up, tardiness, and/or leaving early will be dealt with on a case-by-case basis and may result in losing attendance/participation points.

Due to departmental policy, at the end of the semester you laboratory scores will be scaled to have an 85% class average. Your score will be reported to the Physics 104 lecture instructor, who will [alone] incorporate your grade for the laboratory into your overall course grade.

Exams
There will be two lab exams, each covering half of the semester.

Theoretical vs. Experimental. Some exam problems will test your experimental ability. Others will test your ability to solve problems on paper, based on experiments that we performed. Others may combine both 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.*

TENTATIVE

Physics 104 Lab Schedule

Spring 2014

RS-sections (on Wednesday)

Jan 28, **29**	Lab 1: Charge on a Cup (Coulomb Force)
Feb 4, **5**	Lab 2: Electric-Field Mapping (computer simulation)
Feb 11, **12**	Lab 3: Circuit Elements (Ohm's Law)
Feb 18, **19**	Lab 4: Oscilloscopes and Signals
Feb 25, **26**	Lab 5: Series and Parallel elements (Kirchhoff Rules)
Mar 4, **5**	Lab 6: RC Circuits
Mar 11, 12	**LAB EXAM 1 (for labs 1-6)**
Mar 18, 19	Spring Break
Mar 25, **26**	Lab 7: Magnetic Field Mapping
Apr 1, **2**	Lab 8: Motion of Charged Particles (computer simulation)
Apr 8, **9**	Lab 9: Reflection and Refraction (Law of Optics)
Apr 15, **16**	Lab 10: Lenses (Geometric Optics)
Apr 22, **23**	Lab 11: Diffraction and Interference (Wave Optics)
Apr 29, 30	**LAB EXAM 2 (for labs 7-11)**