Draft Syllabus: GP2 Lab

Spring 2021

Info

- Instructor: Vinu Abeywick
- Email: vabe@nyu.edu
- Class Hours:
  - Sec 04: Thu 11.00am-1.20pm
  - Sec 08: Thu 1.30pm-3.50pm
- Room: Meyer 222
- Zoom Office Hours: TBD

Description

This laboratory course is intended to help you understand the basic principles of waves, electromagnetism, and optics. There are 10 labs in total and you're expected to write up a lab report for each one. We've structured the timeline so there are no labs during exam weeks.

Feb 11	Lab 1: Sonometer
Feb 18	No Lab!
Feb 25	Lab 2: Resonance Tube
Mar 4	Lab 3: Electrostatics
Mar 11	Lab 4: Electric Field Mapping
Mar 18	No Lab!
Mar 25	Lab 5: Voltage, Current, Resistance
Apr 1	Lab 6: Charge to Mass Ratio of Electron
Apr 8	Lab 7: Current Balance
Apr 15	Lab 8: Induction
Apr 22	No Lab!
Apr 29	Lab 9: Snell's Law
May 4	Lab 10: Eye

In-Person vs Remote

You choose at the beginning of the semester whether you're going to take this course in-person or remotely. The department's policy is that you should stick to your choice throughout the semester (to the extent that you can; obviously we'll make reasonable exceptions due to covid).

In-Person Labs

If you're taking the course in-person, you will perform the experiments individually. You should read the manual before coming to class so you know what to expect. [At the very least you should skim over the theory. E&M is non-trivial and it'll be easier if you actually understand what you're observing].

Remote Labs

Each week we'll share a folder with you containing the lab materials (data, videos, simulations, etc). You should base your report on the data we provide. Since you can do most of this work on your own time, there are no mandatory lab meetings for remote sections. There will be two or three weekly office hours on zoom where you can (and should) ask me questions. It's your responsibility to manage your time and keep up with the schedule.

Lab Reports

Each week you will write a lab report on the experiment you performed that week. The report is due one week after the scheduled lab session (Thursday).

Reports will be marked out of 10. Here is a rough breakdown:

- **Theory: /2**
  - A full writeup of the physics principles and equations used in the experiment.
  - Don't be economical with this section. Your writeup should demonstrate that you actually understand the concepts. You should derive equations, show how they relate to each other, etc.
  - In many ways the theory writeup is an opportunity for you to actually learn the material and make some notes on it. If you already have your own notes, use them
  - This semester I'll post more resources/references for further reading.
- **Experiment Setup: /2**
  - Description of what exactly you did in the experiment. The variables you measured, the instruments you used to measure them, the assumptions you made. Diagrams are good.
- **Results: /6** (split into three subsections)
  - **Presentation of data: /2**
    - You should present your data clearly.
  - **Analysis of results, discussion questions: /2**
    - You should discuss your results, explain how they (mis?)-represent the underlying physics, and answer the discussion questions in the manual.
  - **Sources of error: /2**
    - Factors that may have caused impresicions/inaccuracies in the results. Your sources of error should be relevant to the experiment and the data you have. You should also critique the experiment design (I take kindly to this).

This is a draft rubric. If you think I should allocate more/less points to certain sections, let me know.

Class Resource Sharing?

In the past we've used Google Drive for sharing lab material and NYU Classes (ugh) for submitting reports. I seem to recall people had various issues with this setup last semester. If you want me to post material on another platform (e.g. Github Classroom, Dropbox, Baidu, etc), or if you have any other thoughts, let me know and I'll look into it.