

Laboratory C guidelines
Last Edited: 23 October 23, 2019
Instructor: John Howell
Email: johnhowell178@gmail.com

Expectations for the course: This course should be a great learning experience and one in which we hope will give a better understanding of experimental physics. We hope you will enjoy the experience. The guides are to help guide, but not do, the experiments for you. You are expected to perform three experiments throughout the semester, unless you will be doing a special project approved by the instructor. You will need to pass a colloquium before starting the experiment. The colloquium will be approximately one hour in length.

Grades: The course will have three components: the colloquium (30%), experimental (20%), and report (50%). The average grade in the course will be approximately 85%

Colloquium: You will receive your colloquium materials from your guide. You will then have one week to learn the material. You need to ask your guide if the material will be with or without notes. The oral examination will be for both members of the two-person group. The guide will take turns asking questions to both members of the group. If both members of the group do not understand the material at a sufficient level, they will be required to take the exam again. The minimum grade for passing the colloquium is 85%. The grade will be emailed by the guide at the end of the day that the team passes it.

Report: The report will follow Physical Review A Rapid Communications guidelines and style. We prefer that you write the report in English using Latex, but if you prefer to write in Hebrew, that is up to you. We recommend Overleaf.com. It is a free latex user interface. The report should be a maximum 4 pages long. It must include: an abstract, introduction, theory section, description of the experimental setup, Figures (maximum of 4, which includes a figure of the experimental setup), results and error analysis, discussion, conclusions and bibliography with at least 5 references. The reports will be due 2 weeks after the experiment has been completed. Unless you have written permission from your guide, you will lose 2%/day for every day it is late after that. The report will be returned to the students within one week with comments and criticisms from the guide along with an initial grade (out of 100%). The students then have one week to make corrections and improvements if they wish to improve their grade for up to an additional 10 points.

Grading of Reports: When reading a paper, readers often follow a pattern. They first look at the title, then they read the abstract followed by the figures. I recommend reading a highly cited Physical Review Letter before writing to see how it is organized and written. The grade for the report will have the following breakdown: quality of the writing (e.g., grammar, spelling, how well does it tell a story): 20 points; quality of the research: 30 points; organization (e.g., were all the

sections covered in the report?): 20 points; quality of the data analysis (e.g., data fits, error analysis, interpretation of results etc.): 30 points.

Experimental: A portion of your grade will be given based on your lab time. Items within this portion of the grade include: how well did you use your time, did you show up on time, how creative were you in solving problems?

Instructor Comment: Some of the equipment in Lab C is old and needs to be replaced. We will be making yearly updates to the equipment, but it will take time. One thing we consider to important is having good test equipment like oscilloscopes and computers. An important skill we hope you will develop is an ability to solve problems using the test equipment.

Grand Challenges: Every semester there will be a grand challenge. For the time, the grand challenge will be air-water extraction. You have one semester to design, test and demonstrate an air water extractor. We encourage the use of the Arduino equipment to improve efficiency.

Questions or comments: If you have questions or comments please talk to your guides. If you find that your concerns aren't being met or you wish to make comments about the course, please contact me.