

Physics Introductory Labs Remote Lab Instructions (EM labs)

- 1. PHY122/142 do all EM labs. PHY114 students do EM labs 6, 8,9 and Modern Labs 12, 13.**
2. There are scheduled Zoom lab sections which are restricted to students who are not on campus.
3. Only remote students should register for the remote Zoom Lab sections.
4. Remote students should read the GENERAL NOTES, Lab manuals and brief notes and watch the lab videos.
5. Please make sure that you understand the lab lecture on statistics and data analysis (slides are also on blackboard)
6. Read the following on blackboard. **1) General notes (2) Remote_Lab_Instructions.** For each lab XX do the following (1) Read the Lab manual for lab XX. (2) Watch the video for Lab XX. (3) Then at the **remote GROUP file** share area for **Lab XX Brief notes with data**
7. The **Lab XX Brief notes with data file has** several sets of sample data. Students should use the first two sets of data.
8. Unlike in-person students, fully online students do not upload the prelab before the Zoom session. (see item 8)
9. Remote students should do the prelab assignment and **Postlab work which includes the complete postlab assignment answering all the questions using the first set of data.** Then they should do the data analysis with the **second set of data.** Students **should do two postlabs** compare the results from the two sets of data and comment on whether the two results are consistent **within the uncertainties.** **They only need to estimate uncertainties on the final results for this comparison. The comparison of the two sets of data should be about one page. See 2nd page for videos and slides on error analysis.**
10. This work should be done before the Zoom session but not uploaded yet.
11. The remote Zoom lab sections are for students to ask questions about the post-lab work that they have done **BEFORE the ZOOM SESSION.** After the Zoom session, remote students should **finalize the postlab assignment** and upload the **combined prelab and postlab and comparison** between the two sets of data to the LAB upload assignment in blackboard **within 4 hours of the end of the Zoom session.**
12. **Grading:** There are three components. (A) Prelab; (B) Postlab-1 which is the primary lab report; and (C) (postlab-2 plus comparison). In-person students get postlab points for taking the data. Fully-students are given the data, so these points are used instead for (postalab-2 plus comparison). Postlab-2 is primarily for comparison between the two sets of data samples.
13. TA for remote students Zoom sessions : TBA
14. Grade for remote students: TBA

In summary: Students should **do two postlabs** and compare the results from the two sets of data and comment on whether the two results are consistent **within the uncertainties.** **They only need to estimate uncertainties on the final results for this comparison. The comparison of the two sets of data should be about one page . See 2nd page of remote instructions for videos and slides on error analysis.**

After the Zoom session, remote students should **finalize the postlab assignment** and upload the **combined prelab and postlab and comparison** between the two sets of data to the LAB upload assignment in blackboard **within 4 hours of the end of the Zoom session.**

For all five EM labs: Use the first two sets of data and compare and comment on whether the results of the analysis are consistent. If you think that the two are not consistent, you can look at one of the other sets of data to resolve the issue. **For lab 7 specifically:** The in-person students determine the equipotential lines and the field lines via measurements, The remote students should instead figure out and draw what they think the equipotential lines and field lines should be. *Links to lab videos are also provided on the next page.*

Statistics/data analysis: Slides: <http://www.pas.rochester.edu/~physlabs/manuals/L2C-StatisticsForWeb-AB5-short.pdf>

Video: <https://rochester.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=f320519a-2d9d-40b0-b859-abe60105930c>

All Mech Labs Folder: <https://rochester.hosted.panopto.com/Panopto/Pages/Sessions/List.aspx?folderID=fecel6d9-2f55-47c7-8d1b-abe500e68a55>

Lab 1: <https://rochester.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=5bdc1b28-30d1-412a-a76e-ac0500499e6b>

Part of Lab 1 requires pairing with a student in the adjacent lab Table/Bench

Lab 2: <https://rochester.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=576777fd-42ed-4ea7-bbf1-ac0500499e9c>

Lab 3: <https://rochester.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=dd8e6cbc-48de-4f25-8f64-ac05005034e7>

Lab 4: <https://rochester.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=b9766a7f-9b52-40ac-a5d3-ac0500802d2c>

Lab 5: <https://rochester.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=0dc4dd14-4b16-49da-a81e-ac05008ab0f8>

Part of Lab 5 requires pairing with a student in the adjacent lab Table/Bench

E&M LABS 122, 142, 114, 182: (note PHY 114 students do EM labs 6, 8, 9)

All E&M Labs **Folder:** <https://rochester.hosted.panopto.com/Panopto/Pages/Sessions/List.aspx?folderID=8311262e-7cd9-471d-81f6-abe50140eb02>

Lab 6: <https://rochester.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=132ec518-02ae-447c-aa6a-abfa0161c70d>

Lab 7: <https://rochester.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=c1073479-d200-499f-ab3b-abfa0161d8dc>

Lab 8: <https://rochester.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=55e90526-cc7a-498e-a281-ac05004579eb>

Lab 9: <https://rochester.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=aa9dabf7-073e-459b-8402-ac0500497d90>

Instructional video - General Multimeters

<http://www.pas.rochester.edu/~physlabs/manuals/IntroToMulti.mp4>

Instructional video on Multimeters for Lab 9

<http://www.pas.rochester.edu/~physlabs/manuals/Lab9.mp4>

Lab 10: <https://rochester.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=dfcec750-a88e-4688-80bf-ac0100de3e52>

Digital Oscilloscope (For Lab 10) Instructional Video

<https://rochester.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=00a7b093-db11-4023-8e94-ac050098cac8>

MODERN PHYSICS LABS 114, 123, 183: (P114 Spring do EM labs 6,8,9 and Modern labs 12,13)

Experiment #11: <https://rochester.hosted.panopto.com/Panopto/Pages/Sessions/List.aspx?folderID=adc3db27-f099-447e-b301-acc20100c581>

Experiment #12: <https://rochester.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=74a9e9e6-640c-4d5b-9be8-abe500f0ace3>

Experiment #13: <https://rochester.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=a290a03c-148e-47f9-aecce-abe50105dba3>

Experiment #14: <https://rochester.hosted.panopto.com/Panopto/Pages/Sessions/List.aspx?folderID=e362a8b0-0ee4-45a0-95b9-acc20100d0d1>

Experiment 15: <https://rochester.hosted.panopto.com/Panopto/Pages/Sessions/List.aspx?folderID=96ec3da2-4ace-4d81-a981-acc20100dd2a>

Spring 2021 - LABS START Mon. FEB 8th

WEEK LAB CYCLE

PHY 113/121/121P, 114, 123

www.pas.rochester.edu/~physlabs

DATE	WEEK	113 (P)/121(P),	LAB # 114, 123
2/8/21	A	1,	6, 11
2/15/21	B	1,	6, 11
2/22/21	A	2,	8, 12
3/1/21	B	2,	8, 12
3/8/21	A	3,	9, 13
3/15/21	B	3,	9, 13
3/29/21	B	4,	12, 14
4/5/21	A	5,	13, 15
4/12/21	B	5,	13, 15

PHY 113(F), 121(S), 181 (F,S)
 114 (S,F), 122(F), 182 (F,S) , 184 (F,S)
 PHY 123(S), 183 (F)

– B&L 267 PHY
 – B&L 268
 – B&L 165