

Appendix III. Computing

revised September 7, 2016

To prevent a virus infection that could destroy the work of hundreds of students, do not transfer data or programs to the lab computers from any other computer.

Students are not permitted to make changes in the lab computer systems - screen savers, network access, etc. **Students observed modifying system settings will be treated as though they are attempting to damage university property.**

A. Introduction

You will collect much of your data using a computer. The computer should also be your major tool for data analysis. Except for specified computer use within the laboratory, there are no formal computer requirements for this course. If, outside the laboratory, you prefer to analyze your data with a hand calculator, you may do so. However, if you don't use a computer, you will probably find that the burden of calculation quickly becomes very heavy. We recommend that you get accustomed to using the computer for all lab calculations as soon as possible.

B. Platforms

In the laboratory we use Intel™-based computers and Microsoft™ operating systems. Laboratory data collection and analysis programs are available only in the Windows™ format.

Announcements can be accessed by both Windows and Macintosh platforms on the Internet through a Web browser. To connect to the laboratory Web page, use the URL <http://physicslabs.case.edu/>.

To access data files and programs used in the lab, you must connect to the Lab Server rather than the lab Web page.

Instructions for connecting to the Lab Server are given in section G of this appendix.

C. Programs

The main data-collection program in the mechanics labs is the *LoggerPro* 3.8.7. The software includes data analysis facilities and basic plotting functions. This program is available on the lab server in the *Programs*: or P: drive. You are free to copy it to your own PC and use it to analyze your data at home; simply ignore the error messages that pop up because you don't have the hardware connected to your PC. Find the self-extracting zip on the server (P:\Logger Pro\Misc. files and folders\ Logger Pro download from vernier.exe) and copy it to your PC. Then run it.

We use *Origin* version 9.1, a powerful, professional-quality scientific spreadsheet, for more advanced computations. *Origin* is available over CWRUnet so that you can analyze your data at home or at other campus computers. In the laboratory, you must use *Origin* for data analysis, except when you are instructed to use the simpler capabilities of *LoggerPro*. We recommend that you use *Origin* outside the lab as well. If you prefer, you may carry out your calculations with another program *at your own risk*. Lab instructors can provide no assistance with such programs and no breaks in grading will be given if problems or errors result.

Many people are tempted to use spreadsheets such as Excel for data analysis. Invariably they discover that the data and error analysis and plotting features of such programs are inferior. It is safer to use a campus computer with *Origin*. The lab computers may be used when the rooms are not occupied with classes. Open times will

be posted on the 4th floor and on the lab web page.

We do not teach computing in this course but expect you to learn to use the lab software gradually as you progress through the set of experiments. Appendix IV of this manual provides a quick introduction to *Origin*; the program also has extensive built-in on-line help.

D. Data Saving in the Lab

Save data on the lab server *Wertsrv* in **your course directory** on the *Labs*: or L: drive. The data will then be available to you over CWRUnet. You must create your own subdirectory within the appropriate course folder (L:\P115, L:\P116, L:\P121, L:\P122, L:\P123 or L:\P124) and section subfolder, using some combination of your and/or your partner's names or email addresses as the subdirectory name. This naming will simplify the task of locating your files among the thousands saved each semester. Any files not within your own subdirectory may be removed without notice.

We recommend that you name all files according to the following convention:

- Start the name with the abbreviation for the lab you are doing, such as UNC, in uppercase.
- Follow this with an underline character, , and a number which starts with 1 and is incremented for each file you save.
- Let the program append the file type identifier, such as '.opj' (*for Origin files*), or do this yourself.
- A complete filename might read 'UNC_1.opj'.

E. Computer Files for Lab Use

On occasion, we will provide computer files for you to use while taking or analyzing data. This is done to help you in setting up

various experimental parameters or to help guarantee that the syntax is correct when entering a fitting equation. These files are all located on the server under the "P:" drive. The specific names of the files will be provided as needed.

F. Outside Activities

You are welcome to use the lab computers for any university-related course work, although lab work always has priority. **The printers are reserved for lab work only!** Please collect your printouts promptly.

G. Connecting to the Lab Server

You can store files in the *Labs* or L: folder of the lab server, and access them from your networked PC. You can also access lab programs and course program files from the *Programs* or P: folder. The following commands worked at one time but we cannot guarantee that they are correct for all operating systems.

To connect using Windows 7:

Start (bottom left corner of the screen) -> Computer

Select "Map network drive" at the top of the screen

It defaults to Z:, but you might want to call it "L:" for Labs

- In Folder, enter
\\wertsrv.phys.cwru.edu\Labs
- Select "Connect using different credentials"
- Hit "Finish"

Another window will pop up asking for User name (RemoteLab) and password (uglabs)

To connect using Windows 10:

Click on the "Windows" symbol in the bottom left corner

Get to “This PC” from File Explorer (it will be in the quick access column on the left
On the top left click on Computer and select “Map network drive”

It defaults to Z:, but you might want to call it “L:” for Labs

- In Folder, enter
\\wertsrv.phys.cwru.edu\Labs
- Select “Connect using different credentials”
- Hit “Finish”

Another window will pop up asking for User name (RemoteLab) and password (uglabs)

To connect using Macintosh OSX:

In the finder, go to the “Go” menu and select “Connect to Server” (or type command-K).

Type: smb://wertsrv.case.edu/Labs and hit “Enter”

In the dialog that pops up, use

user name: *RemoteLab*

password: *uglabs*

Click OK.

To disconnect, drag the icon for *Labs* to the trash.

You can do the same with the Programs folder.

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