[](http://www.physics.sunysb.edu/Physics/)

[Main](http://phylabs1.physics.sunysb.edu/introlabs/Main.html)   [|](http://phylabs1.physics.sunysb.edu/introlabs/Spring2019/PHY134.html)   [PHY 122](http://phylabs1.physics.sunysb.edu/introlabs/PHY122.html)   [|](http://phylabs1.physics.sunysb.edu/introlabs/Spring2019/PHY134.html)   [PHY 133](http://phylabs1.physics.sunysb.edu/introlabs/PHY133.html)   [|](http://phylabs1.physics.sunysb.edu/introlabs/Spring2019/PHY134.html)   [PHY 134](http://phylabs1.physics.sunysb.edu/introlabs/PHY134.html)

**Laboratory for Classical Physics (I)**
**PHY 134 Spring 2019**

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**About**

This is the organizational page for the Physics Introductory Labs PHY 134 for Spring 2019.

|  |  |  |
| --- | --- | --- |
| **Instructors** | **Director of UG Laboratory** | **Teaching Assistants** |
| R. Lefferts | B. Nielsen |

|  |  |
| --- | --- |
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**Scope**

The scope of the introductory labs is to give an understanding of basic experimental methods applied in physical sciences. The experiments performed during the lab sessions are closely related to the topics covered in the lecture.

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**Overview**

You will perform each week an experiment as indicated in the [**Calendar**](http://phylabs1.physics.sunysb.edu/introlabs/Spring2019/PHY134.html#calendar) section. You have 2 hr 20 min time to perform each experiment. Each experiment will come with a manual that you can access from this webpage.

You are required to perform each lab experiment by yourself, mostly together with a lab partner.

Your perfomance in the lab session will be evaluated by your teaching assistant. The evaluation is based on the introduction of your lab report that you have to write up and submit to your TA at the beginning of the session and your performance during the experiment that includes a final written report that will be submitted in the week following the lab experiment. Please refer also to [**Lab Report Guide**](http://phylabs1.physics.sunysb.edu/introlabs/ReferenceDocs/PHY130sLabReportGuide.html)

Your performance/report will count 100%, of which the introduction is worth up to 15%, toward your grade on the particular lab experiment.
Your final grade will be an average from your single lab grades scaled by a factor that will be determined at the end of the semester. This final grade will be a letter grade ranging from A to F.

Your lab report should give the reader a chance to get a picture of the experiment and what you have done without having the lab manual in their hand. You should not copy excerpts from the manual or only refer to passages in the lab manual. The lab report has to have the following format:

* 1. **Title sheet**

Name, lab-section, TA name, partner name(s), name of experiment, date

* 1. **Introduction                [15 pts]**

In your own words: briefly describe the experiment. Present the main physics intent and the main meaurements of the lab. Please DO NOT copy the lab manual

* 1. **Procedure                   [15 pts]**

Describe briefly what you have done during the session

* 1. **Data sheet                   [20 pts]**

Include data from the lab (including units) and your estimates of experimental uncertainty.Include the data sheet your TA signed as an image or appended.

* 1. **Analysis/Discussion  [40 pts]**

Graphs, calculations, uncertainty caluclations for derived quantities

* 1. **Conclusion                  [10 pts]**

Present the main result of the experiment and summarize the physics implied by the dataComment on the random and systematic error present in the measurement.---------------------------------

**Σ          Sum to    [100 pts]**

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**Manuals and Course Schedule**

Here is the schedule of labs for the semester

The first lab sessions will take place in the week starting from **Monday, January 28.**

* Lab 0 (January 28 - January 31): [**Introduction to the laboratory and Uncertainty, Error & Graphs**](http://skipper.physics.sunysb.edu/~physlab/doku.php?id=phy133:error_and_uncertainty)
* Lab 1 (February 04 - February 07): [**Electric Field Plotting**](http://skipper.physics.sunysb.edu/~physlab/doku.php?id=phy134:lab1)    [**(Data Sheet)**](https://docs.google.com/spreadsheets/d/1L2lYK_8Ry8P-7CscEPArCxRW5cjGfBir1zVjwxYNIFE/edit?usp=sharing)
* Lab 2 (February 11 - February 14): [**The Oscilloscope**](http://skipper.physics.sunysb.edu/~physlab/doku.php?id=phy134:lab2)    [**(Data Sheet)**](https://docs.google.com/spreadsheets/d/11rrbffQQEtewJpY8u3TBy2K1slsSsEoZiWM0Nqk_8UE/edit?usp=sharing)
* Lab 3 (February 18 - February 21): [**Capacitors**](http://skipper.physics.sunysb.edu/~physlab/doku.php?id=phy134:lab3)    [**(Data Sheet)**](https://docs.google.com/spreadsheets/d/1vVHI4Z4LyTBJOC5Ki4SI-bQ-jmseQePcYz0_2-7NvAk/edit?usp=sharing)

February 25 - March 01: Make-up Lab Week for Labs 1 - 3. No lab classes.

* Lab 4 (March 04 - March 07): [**Ohm's Law**](http://skipper.physics.sunysb.edu/~physlab/doku.php?id=phy134:lab4)    [**(Data Sheet)**](https://docs.google.com/spreadsheets/d/1Xp2bgiizIVKWd91aFRu0JF6WRTzJiKkGJELK7T4nfLM/edit?usp=sharing)
* Lab 5 (March 11 - March 14): [**Magnetic Force 1**](http://skipper.physics.sunysb.edu/~physlab/doku.php?id=phy134:labmagforce1) or [**e/m of the Electron**](http://skipper.physics.sunysb.edu/~physlab/doku.php?id=phy134:lab6eoverm)

      Data Sheets for [**(Mag Force I Data)**](https://docs.google.com/spreadsheets/d/1L8SoGYZrpZx36gY27WTxGiByXXhdwJLdFLGzv-fH9Xs/edit?usp=sharing)and [**(e/m Data)**](https://docs.google.com/spreadsheets/d/1nUQT1KP90QILQSbIR5_bkORIFqvVIhVXbkza-hdrnmM/edit?usp=sharing)
March 18 - March 22: Spring Break. No lab classes.

* Lab 6 (March 25 - March 28): [**e/m of the Electron**](http://skipper.physics.sunysb.edu/~physlab/doku.php?id=phy134:lab6eoverm) or [**Magnetic Force 1**](http://skipper.physics.sunysb.edu/~physlab/doku.php?id=phy134:labmagforce1)

April 01 - April 05: Make-up Lab Week for Labs 4 - 6. No lab classes.

* Lab 7 (April 08 - April 11): [**LRC Circuits**](http://skipper.physics.sunysb.edu/~physlab/doku.php?id=phy134:lablrc)   [**(Data Sheet)**](https://docs.google.com/spreadsheets/d/1pVieqL60rHQvCQCLdqHYycX8BYFRpWw0zpideOn2Wp4/edit?usp=sharing)
* Lab 8 (April 15 - April 18): [**Resonance**](http://skipper.physics.sunysb.edu/~physlab/doku.php?id=phy134:resonance)    [**(Data Sheet)**](https://docs.google.com/spreadsheets/d/1LDA5UypohP_uhrclwHt4c0OhXm06Uvbs3XsopoaFnT4/edit?usp=sharing)
* Lab 9 (April 22 - April 25): [**Optics**](http://phylabs1.physics.sunysb.edu/introlabs/labmanual_archive/PHY134_Optics.pdf)   [**(Data Sheet)**](https://docs.google.com/spreadsheets/d/1CqxIXcPegCvMZbdSFUnhBHEO8dwoisPsujpsPXy5rvY/edit?usp=sharing)
* Lab 10 (April 29 - May 02): [**Interference**](http://skipper.physics.sunysb.edu/~physlab/doku.php?id=phy134:interference)    [**(Data Sheet)**](https://docs.google.com/spreadsheets/d/1rWhav1VP4Iz3DZv74c90u8jIXOJDYr65dwLMK2E_VWo/edit?usp=sharing)

May 06 - May 10: Make-up Lab Week for Labs 7 - 10.

[**Folder of All Data Sheets**](https://drive.google.com/open?id=1_yo-R88XkzfS3dZaOeXodNgxo4qfp25p)

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**Reference Documents and Tools**

Here are some documents you will find helpfuls:

[**Lab Report Guide**](http://phylabs1.physics.sunysb.edu/introlabs/ReferenceDocs/PHY130sLabReportGuide.html)

[**Guide to Uncertainty and Error Analysis**](http://phylabs1.physics.sunysb.edu/introlabs/ReferenceDocs/ErrorAnalysis.pdf)

[**Introduction to Google Sheets**](http://phylabs1.physics.sunysb.edu/introlabs/ReferenceDocs/GoogleSheetsBasics.pdf) (and [**Advanced Techniques in Google Sheets**](http://phylabs1.physics.sunysb.edu/introlabs/ReferenceDocs/GoogleSheetsAdvanced.pdf))

[**How to Use Google Sheets in This Class**](http://phylabs1.physics.sunysb.edu/introlabs/ReferenceDocs/GoogleSheetsForLabs.pdf)

[**Guide to Making and Using Plots**](http://phylabs1.physics.sunysb.edu/introlabs/ReferenceDocs/MakingAndUsingPlots.pdf)

Here is a link to the plotting tool we will use to make our graphs in this class:

[**PHY133/134 Plotting Tool**](http://phylabs1.physics.sunysb.edu/introlabs/PlottingTool/PHY130sPlottingTool.html) [**Older Version of PHY133/134 Plotting Tool**](http://skipper.physics.sunysb.edu/~physlab/doku.php?id=phy133:plottingtool)

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**Lab Sections**

To Be Announced circa January 28, 2019

|  |  |  |  |
| --- | --- | --- | --- |
| **Section** | **When** | **Where** | **Teaching Assistant** |
| PHY134 L01 | Mo 12:00pm - 2:20pm | A-116 |  |
| PHY134 L02 | Mo 12:00pm - 2:20pm | A-130 |  |
| PHY134 L03 | Mo 2:30pm-4:50pm | A-116 |  |
| PHY134 L04 | Mo 2:30pm-4:50pm | A-130 |  |
| PHY134 L05 | Mo 5:00pm-7:20pm | A-116 |  |
| PHY134 L06 | Mo 5:00pm-7:20pm | A-130 |  |
| PHY134 L07 | Tu 12:00-2:20pm | A-130 | TBA |
| PHY134 L08 | Tu 12:00-2:20pm | A-130 | TBA |
| PHY134 L09 | Tu 8:00am-10:20am | A-119 |  |
| PHY134 L10 | Th 8:00am-10:20am | A-119 |  |
| PHY134 L11 | We 2:30pm - 4:50pm | A-116 |  |
| PHY134 L12 | We 2:30pm - 4:50pm | A-130 |  |
| PHY134 L13 | We 5:00pm - 7:20pm | A-116 |  |
| PHY134 L14 | We 5:00pm - 7:20pm | A-130 |  |
| PHY134 L15 | Th 12:00 - 2:20pm | A-116 |  |
| PHY134 L16 | Th 12:00 - 2:20pm | A-130 |  |
| PHY134 L17 | Th 2:30pm-4:50pm | A-116 |  |
| PHY134 L18 | Th 2:30pm-4:50pm | A-130 |  |
| PHY134 L19 | Th 5:00pm - 7:20pm | A-116 |  |
| PHY134 L20 | Th 5:00pm - 7:20pm | A-130 |  |
| PHY134 L21 | Tu 8:00am - 10:20am | A-116 |  |
| PHY134 L22 | Tu 8:00am - 10:20am | A-130 |  |
| PHY134 L23 | Th 8:00am - 10:20am | A-116 |  |
| PHY134 L24 | Th 8:00am-10:20am | A-130 |  |
| PHY134 L25 | Mo 12:00pm - 2:20pm | A-119 |  |
| PHY134 L26 | Mo 2:30pm - 4:50pm | A-119 |  |
| PHY134 L27 | Mo 5:00pm - 7:20pm | A-119 |  |
| PHY134 L28 | Tu 12:00 - 2:20pm | A-119 |  |
| PHY134 L29 | We 2:30pm - 4:50pm | A-119 |  |
| PHY134 L30 | We 5:00pm - 7:20pm | A-119 |  |
| PHY134 L31 | Th 12:00pm - 2:20pm | A-119 |  |
| PHY134 L32 | Th 2:30pm - 4:50pm | A-119 | TBA |

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**Due Dates, Late Work and Absence Policies**

You are responsible for keeping track of deadlines for your lab reports. A list of deadlines (and return dates for work) is available here: [**Due Dates**](http://phylabs1.physics.sunysb.edu/introlabs/Spring2019/DueDates134.html)

Be alert to announcements about changes to this schedule from your TA or via Blackboard.

**Any lab report submitted after the deadline will not be considered and receive zero points for the lab experiment.**

Exceptions for partial credit may be granted by a TA or the course instructor, with suitably documented reasons.

If you need to be absent for a lab experiment you will have to provide written documentation for a significant reason to be absent, e.g., a medical note from your doctor or a written document about jury duty.

With such documentation, you will have the opportunity to make up the lab experiment in the dedicated make-up week. Under such circumstances, please submit a make-up request via the [**PHY134 Make-Up Request Form**](https://docs.google.com/forms/d/e/1FAIpQLSf_CnGNCZ1dwkBj7NuWSpFG8NQQZBiwHl15Mgf1sBc0mBvcrQ/viewform?usp=sf_link)

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**Contact Us**

There are three ways to ask questions or report problems:

* To contact your TA, use the e-mail addresses provided at the top of this page. This is the best option for lab-specific questions, such as checking requirements.
* To contact all TAs, use PHY134\_lab@stonybrook.edu. This is the best option for general physics questions. If you cannot get in touch with your own TA and have a question on how to do a calculation (or why numbers look weird), this is also a reasonable place to contact.
* For administrative concerns, contact the course instructor, Richard Lefferts, at phy\_introlabs@stonybrook.edu or in Office Hours, 1-3pm Thursday in A-129 of Grad Physics. This is the best option if you have a problem with your TA or something of that nature.

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**Lab Manual Archives**

These are only pdf files (no forms or plotting functions)

[**Uncertainty, Error and Graphs**](http://phylabs1.physics.sunysb.edu/introlabs/labmanual_archive/Uncertainty%2C%20Error%20and%20Graphs.pdf)
[**The Oscilloscope**](http://phylabs1.physics.sunysb.edu/introlabs/labmanual_archive/PHY134_Oscilloscope.pdf)
[**Electric Field Plotting**](http://phylabs1.physics.sunysb.edu/introlabs/labmanual_archive/PHY134_Electric%20Field%20Plotting.pdf)
[**Capacitors**](http://phylabs1.physics.sunysb.edu/introlabs/labmanual_archive/PHY134_Capacitors.pdf)
[**Ohm's Law**](http://phylabs1.physics.sunysb.edu/introlabs/labmanual_archive/PHY134_Ohm%27s%20Law.pdf)
[**Magnetic Force 1**](http://phylabs1.physics.sunysb.edu/introlabs/labmanual_archive/PHY134_Magnetic%20Force%201.pdf)
[**e/m of the electron**](http://phylabs1.physics.sunysb.edu/introlabs/labmanual_archive/PHY134_e_m%20of%20the%20electron.pdf)
[**Magnetic Force 2**](http://phylabs1.physics.sunysb.edu/introlabs/labmanual_archive/PHY134_Magnetic%20Force%202.pdf)
[**LRC Circuits**](http://phylabs1.physics.sunysb.edu/introlabs/labmanual_archive/PHY134_LRC%20Circuits.pdf)
[**Resonance**](http://phylabs1.physics.sunysb.edu/introlabs/labmanual_archive/PHY134_Resonance.pdf)
[**Interference and Diffraction**](http://phylabs1.physics.sunysb.edu/introlabs/labmanual_archive/PHY134_Interference%20and%20Diffraction.pdf)