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**Laboratory for Introductory Physics for Life Sciences (II)**
**PHY 122 Lab Spring 2019**

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**About**

This is the organizational page for the Physics Introductory Labs portion of PHY 122 for Spring 2019.

|  |  |  |
| --- | --- | --- |
| **Instructors** | **Director of UG Laboratory** | **Teaching Assistants** |
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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 [**Manuals and Course Schedule**](http://phylabs1.physics.sunysb.edu/introlabs/Spring2019/PHY122.html#manuals) section. You have 1 hr 50 min time to perform each experiment, by yourself or with a lab partner. Each experiment will come with a manual that you can access below.

For each lab, your perfomance will be evaluated by your teaching assistant based on the following components:

1. **Pre-Lab Quiz (15 pts):** Short set of questions (on Blackboard) about lab procedure and goals.
2. **Data table (10 pts):** A reasonably-formatted copy of the data you took in lab (along with calculated quantities, as relevant).
3. **Analysis (60 pts):** Varies, consists of the following components:
	* Graphs (see the [**PHY121/122 Plotting Tool**](http://phylabs1.physics.sunysb.edu/introlabs/PlottingTool/PHY120sPlottingTool.html))
	* Calculations, including uncertainty propagation (relevant work shown)
	* Questions (listed in lab manuals; some selection will be chosen by your TA)
	* Other: Some labs require other specific items, which will also belong to this section.
4. **Executive Summary (15 pts):** A concise summary of all important results of the experiment.

The pre-lab quiz will always be due on the same day that the lab is performed. All other components will generally be due in the subsequent lab class, with possible exceptions to be specified by your TA.

Reports are to be done individually (including data collection - you and your partner should independently record all data). Although collaboration is allowed, your work should be your own. Work that is duplicated between reports will be punished severely.

Your final score 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 score will be part of your mothercourse's grade weighted with 25%. You will receive a single final grade for PHY 122.

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**Manuals and Course Schedule**

The first lab sessions will take place in the week starting from **Monday, January 28**, proceeding as follows:

* Lab 0 (January 28 - January 31): [**Expectations**](http://phylabs1.physics.sunysb.edu/introlabs/ReferenceDocs/PHY120sLabReportExpectations.html) and [**Error Analysis**](http://phylabs1.physics.sunysb.edu/introlabs/ReferenceDocs/ErrorAnalysis.pdf)
* Lab 1 (February 04 - February 07): [**The Oscilloscope**](http://phylabs1.physics.sunysb.edu/introlabs/PHY122Manuals/Oscilloscope.html) ([**Data Sheet**](https://docs.google.com/spreadsheets/d/1jx0bIrcTZo4TFL6rR9yAZqMgFGRUKxAHd3xxkck4Tjs))
* Lab 2 (February 11 - February 14): [**The Electric Field**](http://phylabs1.physics.sunysb.edu/introlabs/PHY122Manuals/EField.html) ([**Data Sheet**](https://docs.google.com/spreadsheets/d/1r2WyBR6HYunVfw0-xrZIVNsah53qT2WBQaqHbelImOs))
* Lab 3 (February 18 - February 21): [**DC Circuits**](http://phylabs1.physics.sunysb.edu/introlabs/PHY122Manuals/DCCircuits.html) ([**Data Sheet**](https://docs.google.com/spreadsheets/d/14-bh40XH5ZjGRKF5AGjjOtK4j9eHORoYn6gWr5ULzKI))

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

* Lab 4 (March 04 - March 07): [**Magnetic Force**](http://phylabs1.physics.sunysb.edu/introlabs/PHY122Manuals/MagForce.html) ([**Data Sheet**](https://docs.google.com/spreadsheets/d/1P5EN7IDpEb9Cjnv3iuC_5_URwt0j_b_k0jKLel8esvY))
* Lab 5 (March 11 - March 14): [**Magnetic Field/Induction**](http://phylabs1.physics.sunysb.edu/introlabs/PHY122Manuals/Induction.html)([**Data Sheet**](https://docs.google.com/spreadsheets/d/177MkvXgZOveDL8XtU73LzBWnWp_nR67PwCNcoRCudcA))

March 18 - March 22: Spring Break. No lab classes.

* Lab 6 (March 25 - March 28): [**AC Circuits**](http://skipper.physics.sunysb.edu/~physlab/doku.php?id=phy124:accircuits) (Old manual for reference only)

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

* Lab 7 (April 08 - April 11): [**Charge-to-Mass Ratio (e/m) of the Electron**](http://phylabs1.physics.sunysb.edu/introlabs/PHY122Manuals/EoverM.html)([**Data Sheet**](https://docs.google.com/spreadsheets/d/1DApMo3ehg07wjcyKJh92HA7COqFL-d1PgIATQTfxT4Y))
* Lab 8 (April 15 - April 18): [**Geometric Optics**](http://phylabs1.physics.sunysb.edu/introlabs/PHY122Manuals/GeometricOptics.html)([**Data Sheet**](https://docs.google.com/spreadsheets/d/11acm34xQEpSxt3p-_JAptwvHw6kRP7EuCJexIAMs4B4))
* Lab 9 (April 22 - April 25): [**Interference and Diffraction**](http://skipper.physics.sunysb.edu/~physlab/doku.php?id=phy124:interference) (Old manual for reference only)
* Lab 10 (April 29 - May 02): [**Atomic Spectra**](http://phylabs1.physics.sunysb.edu/introlabs/PHY122Manuals/AtomicSpectra.html) ([**Data Sheet**](https://docs.google.com/spreadsheets/d/1frxtXZlRyWOuMeF2cJYkGRRjyGKuz8y_Ve_u2oiBAz4))

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

Link to All Data Sheets coming January 21, 2019

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**Reference Documents and Tools**

Here are some documents you will find helpful to reference that are common to all labs:

[**Lab Report Expectations**](http://phylabs1.physics.sunysb.edu/introlabs/ReferenceDocs/PHY120sLabReportExpectations.html)

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

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

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

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

[**PHY121/122 Plotting Tool**](http://phylabs1.physics.sunysb.edu/introlabs/PlottingTool/PHY120sPlottingTool.html)

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**Sections**

To be Announced circa January 28, 2019

|  |  |  |  |
| --- | --- | --- | --- |
| **Section** | **When** | **Where** | **Teaching Assistant** |
| PHY122 L01 | Mo 12:00 - 1:50pm | A-120 |  |
| PHY122 L02 | Mo 12:00 - 1:50pm | A-118 |  |
| PHY122 L03 | Mo 2:00pm - 3:50pm | A-120 |  |
| PHY122 L04 | Mo 3:00pm - 3:50pm | A-118 | TBA |
| PHY122 L05 | Mo 4:00pm - 5:50pm | A-120 |  |
| PHY122 L06 | Mo 4:00pm - 5:50pm | A-118 | TBA |
| PHY122 L07 | Th 3:00pm- 4:50pm | A-120 |  |
| PHY122 L08 | Th 3:00pm- 4:50pm | A-118 |  |
| PHY122 L09 | Tu 1:00pm- 2:50pm | A-120 |  |
| PHY122 L10 | Tu 1:00pm- 2:50pm | A-118 |  |
| PHY122 L11 | We 2:30pm - 4:20pm | A-120 |  |
| PHY122 L12 | We 2:30pm - 4:20pm | A-118 | TBA |
| PHY122 L13 | We 4:30pm - 6:20pm | A-120 |  |
| PHY122 L14 | We 4:30pm - 6:20pm | A-118 | TBA |
| PHY122 L15 | Th 1:00pm - 2:50pm | A-120 |  |
| PHY122 L16 | Th 1:00pm - 2:50pm | A-118 | 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/DueDates122.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 [**PHY122 Make-Up Request Form**](https://docs.google.com/forms/d/e/1FAIpQLSd4LCK5D0nMPlCU4zGvZst61AcnjNl7bmiEtOR3ExjVh3dkYQ/viewform).

If you are absent for a non-excusable reason your lab grade for that particular experiment will be Zero (0) points! If you are absent for a non-excusable reason for more than one lab you will fail PHY 122.

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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 PHY122\_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. This is the best option if you have a problem with your TA or something of that nature.

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