

# Intro Experimental Physics II

## Course Information

Monday 9:30-10:45

Room: Meyer 122 (lectures)

Instructor: Prof. Kyle Cranmer

Office: 726 Broadway, Rm. 852

Office Phone: (212)-998-7736

Office Hours: By appointment

Email: [prof.cranmer@gmail.com](mailto:prof.cranmer@gmail.com) (please use this address, not the nyu.edu address)

Section	Time	TA	Email
002	M / 3:00 - 6:00	Argha Mondal	<a href="mailto:am6254@nyu.edu">am6254@nyu.edu</a>
003	T / 3:30 - 6:30	Marc Williamson	<a href="mailto:mew488@nyu.edu">mew488@nyu.edu</a>
004	W / 9:15 -12:15	Amanda Lesar	<a href="mailto:aal380@nyu.edu">aal380@nyu.edu</a>

All lab sections in Meyer 224

## Course Objectives

The second of two introductory-level laboratory courses. The objectives of these courses are to introduce essential experimental techniques including set-up and operation of basic laboratory equipment, elementary experimental design, statistics and inference, and computational data analysis. Experimental techniques are introduced in the context of classic physics experiments.

1. refine understanding of the notion of “uncertainty” in scientific context.
2. develop critical quantitative reasoning abilities, including estimation, approximation, and calculation.
3. develop basic understanding of Monte Carlo techniques
4. appreciate and anticipate how computers are evolving scientific practices

## Course Text

*An Introduction to Error Analysis*, 2nd Ed. by John R. Taylor (Univ. Sci. Books, 1997).

## Lab Descriptions

[http://physics.nyu.edu/~physlab/GenPhysI\\_PhysII/phys2.html](http://physics.nyu.edu/~physlab/GenPhysI_PhysII/phys2.html)

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## Lectures

Lectures will complement the labs themselves, and it is important that you attend them (with exceptions for illness, religious holidays, and related conflicts). The midterm and final will primarily test the concepts discussed during lectures. Please ask questions during lectures and recitations. If there is something you don't understand, many other students are having the same trouble, guaranteed. If there is some aspect of the pace, content, or structure of the course you don't like, or any other feedback you would like to give, please let Prof Cranmer know as soon as possible. If you wait until course evaluation forms are handed out at the end of the semester, you will have benefited next year's class at the expense of your own!

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## Computers & Programming

We will make some use of basic programming to emphasize the quantitative and predictive nature of physics in situations that are not amenable to compact analytic expressions (equations). The lab course will primarily make use of the Python programming language.

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## Course Grades

	Normal
Midterm exam	10%
Labs	70%
Final Exam	20%

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## Class Web Site

A Blackboard web site for this class will exist and will be accessible through your NYUHome account or by going to <http://classes.nyu.edu> and logging on using your netID and the same password as that of your NYU email account. You must have an active NYU email account to access the site.

## Weekly schedule

<b>Lab experiment</b>	<b>The Experiment runs in</b>	<b>For the Week of</b>
1. Electric Field Mapping	223	Feb 04
2. Coulomb Balance	223	Feb 11
<b><u>There are no Intro Experimental Physics II labs for the week of FEB 18</u></b>		
3. Oscilloscope	223	Feb 25
4. Voltage, Current and Resistance	223	Mar 04
<b><u>There are no Intro Experimental Physics II labs for the week of March 11</u></b>		
5. RC Circuit	223	Mar 18
6. Charge to Mass Ratio of an Electron	223	Mar 25
7. Current Balance	223	April 01
8. Magnetic Field of a Circular Coil	223	April 08
9. RL Circuit	223	April 15
10. RLC Resonance Circuit	223	April 22
11. Electromagnetic Induction	223	April 29