

Physics 224: Fundamentals of Physics Laboratory II - SL
Spring 2018
Syllabus

Instructor: Dr. Sergio B. Mendes

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Prepared by: S.B. Mendes on Jan 05, 2018

Course Location: Natural Sciences room 301

Credit hours: 1 credit hour

Section	Time	Teaching Assistant	Email Address
01	T 9:00 a.m. - 10:50 a.m.	Mathias Scott-Jones	msjone04@exchange.louisville.edu
02	T 11:00 a.m. - 12:50 p.m.	Bharat Giri	b0giri01@exchange.louisville.edu
03	T 1:00 p.m. - 2:50 p.m.	Sahar Goharshenasanesfahani	sahar.goharshenasanesfahani@louisville.edu
04	W 9:00 a.m. - 10:50 a.m.	Mathias Scott-Jones	msjone04@exchange.louisville.edu
05	W 1:00 p.m. - 2:50 p.m.	Bharat Giri	b0giri01@exchange.louisville.edu
06	Th 9:00 a.m. - 10:50 a.m.	Nawraj Sapkota	n0sapk01@exchange.louisville.edu
07	Th 1:00 p.m. - 2:50 p.m.	Rong Zhao	rong.zhao@louisville.edu
08	Th 11:00 a.m. - 12:50 p.m.	Rong Zhao	rong.zhao@louisville.edu
75	W 7:00 p.m. - 8:50 p.m.	Sahar Goharshenasanesfahani	sahar.goharshenasanesfahani@louisville.edu

Laboratory location: NS 301

Course website: <http://www.physics.louisville.edu/sbmendes/teaching.htm>

Course Description: The goals of this course are to demonstrate to the students the laws and principles of Physics in electricity, magnetism, and optics, and to allow the students to acquire hands-on skills in experimental Physics.

Class Materials: Materials for this class can be found on the instructor's website listed above. You are responsible for downloading and printing out the lab material for each experiment (which will contain both the pre-lab quiz and the lab manual).

Natural Sciences General Education Learning Outcomes: PHYS 223 has been designated as a course which meets the natural sciences criteria for the Cardinal Core. Natural Sciences are concerned with understanding the laws of nature and the physical world. The following outcomes with the corresponding assessment criteria are expected by the students who satisfy this requirement:

Outcome 1: Demonstrate an understanding of the nature and methods of science inquiry.

Assessment 1: Students will be required to describe the scientific method, and practice controlled experiments and observation. They will record observations and collect data in lab reports.

Outcome 2: Apply scientific principles: to interpret evidence, to make predictions, and/or to explain cross-cutting concepts in one or more of the sciences.

Assessments 2: Students will be required to manipulate formulae in order to extract physical quantities of interest. Exercises will require students to draw relationships between physical phenomenon, mathematical expressions and measured physical quantities.

Outcome 3: Explain how scientific principles relate to issues of personal and/or societal importance.

Assessment 3: Students will be required to analyze scientific data and current technologies that apply the scientific principles being investigated by the students.

Outcome 4: Communicate effectively an understanding of scientific concepts and experimental outcomes in speech or writing, using sound scientific terminology and citation appropriate to the discipline.

Assessment 4: Students be required to write reports that require them to describe the application of scientific concepts, use professional, scientific terminology and, when appropriate, cite peer-reviewed scientific literature.

Before each lab section: Before coming to any lab section, you should read the instructor's lab manual and complete the pre-lab quiz. You will be required to turn-in your pre-lab quiz before you start any experiment.

Each lab section will be divided into teams. Each team will have no more than four students.

After the experiment: It will be necessary for each student to complete an individual lab report for each experiment. For your guidance in preparing the individual lab report and, as a minimum requirement, the report should have the following items:

- The first page should contain **your name**, the **title of the experiment**, the **date** it was **performed**, and the names of your **lab team partners**.

- Starting on the second page your lab report should contain (at least) one paragraph for each topic listed below:
 - An **introduction** and **background** to the experiment.

 - A clear statement of the **objective(s)** of the experiment.

- A description/drawing of the **experimental setup** and **procedures** used in the data collection process.

- An **analysis** of the collected data and statement of **major findings**.

- The **conclusions** that you arrived based on your experimental results.

- An **appendix** with the completed data sheets collected from the experiment and used for the write-up, and any graphs that are requested in the text of the write-up questions. There should be only one graph per page. The graphs should be properly labeled (label the variable being plotted in the x- and y- axes, and give the proper units of each variable). Any quantity extracted from the graphs should have its extraction and calculation clearly shown.

- On a separate page, you should provide **answers** to the **questions** stated in the instructor's lab manual. You can use more than one page if you need it.

(Note: A statement that the equipment is faulty leading to wrong results will not be acceptable. If a piece of equipment does not work, inform your lab assistant and he/she will fix it, replace it, or move you to another station)

Completed lab reports are due one week from the day on which they are executed. Late lab reports will automatically have 20% deducted for lateness. Lab reports later than two weeks (from day of the experiment) will not be accepted.

Grading: Lab reports will be graded according to the following scheme:

- 10% for proper answers to the pre-lab quiz.
- 70% for the quality of discussions (introduction/background, objectives, setup, data analysis, conclusions) and presentation of collected data and results (graphs, data sheet, tables, drawings).
- 20% for proper answers to the questions asked in the instructor's lab report.

The final course grade will be calculated based on the average of all 10 lab reports scheduled for this course.

Grade	Range
A+	≥ 97
A	94-96
A-	90-93
B+	87-89
B	84-86
B-	80-83
C+	77-79
C	74-76
C-	70-73
D+	67-69
D	64-66
D-	60-63
F	≤ 59

Week of	Lab Number	Experiment
Jan 15 - Jan 19	I	Electric Field and Electric Potential (Part A)
Jan 22 - Jan 26	II	Electric Field and Electric Potential (Part B)
Jan 29 - Feb 02	III	Coulomb's Constant
Feb 05 - Feb 09	IV	Ohm's Law
Feb 12 - Feb 16	V	RC Circuits
Feb 19 - Feb 23	Make-up	
Feb 26 - Mar 02	VI	Earth's Magnetic Field

Mar 05 - Mar 09	VII	Current Balance
Mar 19 - Mar 23	VIII	Diffraction Grating and Optical Spectrum
Mar 26 - Mar 30	IX	Optical Dispersion
Apr 02 - Apr 06	X	Thin Lenses
Apr 09 - Apr 13	Make-up	

MAKEUP POLICY

No lab is optional. There will be two make-up sections (one section for labs I-V and one for labs VI-X). You will be allowed to make up for only one missed lab in each section.

Missed laboratory experiments can only be made up during the two make-up weeks.

You will probably have to work without a team partner if you do make-up labs. Only one lab can be made up during a given make-up session regardless of the number of labs that you were absent. You may not use make up sessions to improve a grade that was received for a lab. You will not be able to perform a make-up lab without requesting to do so one week in advance. These requests should be made to your GTA.

NOTES:

1. You must adhere to standards of academic integrity as outlined:
<http://Louisville.edu/dos/policiesprocedures/students-rights-and-responsibilities-1-1.html>

2. The instructor reserves the right to modify the syllabus as necessary, to fulfill learning objectives or to compensate for missed classes.

3. Title IX/Clery Act Notification

Sexual misconduct (sexual harassment, sexual assault, and sexual/dating/domestic violence) and sex discrimination are violations of University policies. Anyone experiencing sexual misconduct and/or sex discrimination has the right to obtain confidential support from the PEACC Program 852-2663, Counseling Center 852-6585 and Campus Health Services 852-6479.

Reporting your experience or incident to any other University employee (including, but not limited to, professors and instructors) is an official, non-confidential

report to the University. To file an official report, please contact the Dean of Student's Office 852-5787 and/or the University of Louisville Police Department 852-6111. For more information regarding your rights as a victim of sexual misconduct, see the *Sexual Misconduct Resource Guide*:

(<http://louisville.edu/hr/employeerelations/sexual-misconduct-brochure>).