

PHYS.1440L Physics II Lab (Spring 2020)

COURSE POLICY

<u>Course Section Info.</u>	Section number _____ / meeting time _____
<u>Lab Instructor</u>	_____
<u>Office/Email</u>	_____ / _____
<u>Faculty Supervisor</u>	_____ Dr. Andriy Danylov _____
<u>Office/Email</u>	__ Olney 123 __ / __ Andriy_Danylov@uml.edu _____
<u>Corequisite Course</u>	PHYS.1440 Physics II
<u>Lab Coordinator</u>	Dr. Mittler (Olney 137, tel. 978.934.3775, email Arthur_Mittler@uml.edu)
<u>Required Materials</u>	a) laboratory manual – PHYSICS Laboratory Experiments, Revised 9th ed. by Pullen, Mittler & Schier (McGraw-Hill) b) scientific calculator c) metric ruler (15 to 30 cm long, preferably transparent) f) lab notebook (hardbound, with numbered pages)
<u>Room</u>	See posted notices on lab doors (Olney 103 - 110) or see website listed below.
<u>Attendance</u>	Required for all six lab sessions.
<u>Absences</u>	There will be NO MAKEUPS due to the restrictions of the academic calendar.
<u>Restrictions</u>	Consumption of any FOOD or DRINK is NOT ALLOWED in the lab rooms.
<u>Assistance</u>	Please contact your laboratory section instructor for assistance in the course.
<u>Information</u>	Notices concerning the physics service laboratory courses will be posted in the display cases <u>opposite Olney 111</u> and on the lab room doors.
Schedules:	https://sites.uml.edu/andriy-danylov/teaching/physics-ii/ and in Blackboard
Rooms:	Click on Lab Announcements
<u>Academic Conduct</u>	You are responsible for appropriate academic conduct. Please refer to the university's academic integrity policy at:

<http://www.uml.edu/Catalog/Undergraduate/Policies/Academic-Policies/Academic-Integrity.aspx>

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COURSE REQUIREMENTS

Pre-lab Assignment

There will be no **pre-lab assignments** for all experiments.

Lab Work

In this course, you will be introduced to a wide range of physical phenomena, measurement techniques and methods of analysis. You will be required to keep a careful record of your observations and measurements in a laboratory notebook and to write a formal report on each of your experiments. Working with a partner will enable you to share the data taking, but each of you should participate in all observations and measurements and check the other's work for accuracy. You are **separately responsible** for all measurements taken and should keep independent records in your laboratory notebook – do not simply copy from your partner's notebook. You are encouraged to discuss your results and learn from each other, but your reports must reflect **strictly individual efforts**. The **Lab Manual Pages** with data tables pertaining to the experiment are **not** part of the lab report – they should stay in the manual or be stapled/ taped to your lab notebook. The data tables will be checked and initialed by the instructor at the end of the lab, and they will serve as proof of your attendance and participation. The information from the data tables should be copied to and presented in the lab report.

All sections (A-G) of the lab report listed on the **next page** must be **stapled** together to form the lab report.

All reports are due at the **one week from the time the experiment was performed**. Check with your laboratory instructor for the procedure for handing in your lab report and any variance from the 'due' date.

Lab Report

The lab report must consist of the following 7 parts: **A) Cover Page, B) Introduction, C) Apparatus and Procedure, D) Results and Analysis, E) Discussion, F) Conclusions, and G) Questions.** You are encouraged to discuss your results and learn from each other, but your reports must reflect **strictly individual efforts**.

A) Cover Page with Objective(s) (3 pts.)

Your Name

Course Number and Section Number

Instructor's Name

Date Experiment was performed

Partner(s)'s Name(s)

Title of Experiment

Objective(s)

Objective(s): One or two sentences describing the primary goal(s) of the experiment.

B) Introduction (7 pts.)

This should include the underlying theory of the experiment along with all appropriate equations. Each equation should have a brief description with clear definitions of all the variables. Develop any needed derivations including an explanation of your steps.

C) Apparatus and Procedure (10 pts.)

1. Provide a complete list of the equipment used.
2. Include a labeled block diagram for **each** part of the experiment.
3. Describe briefly how the experiment **was** performed.

D) Results and Analysis (20 pts.) (two parts)

1. Results: Provide the data that you have collected during the experiment in terms of data tables and/or graphs. Do calculations as required. Provide a sample calculation for each significant part of your results. Results should be reported with proper units and uncertainties.
2. Analysis: Analyze and describe your data and results in detail. Refer to the diagrams, data tables, and graphs that represent your data and results. Describe the results in terms of what it means (look for data trends, functional relationships, and consistency of results, etc.).

E) Discussion (10 pts.)

1. Discuss and explain your results by comparing them with the theory.
2. Discuss and explain the experimental uncertainties.
3. Explain any difficulties that you may have had in doing the experiment.

F) Conclusions (5 pts.)

Your conclusions should summarize (in a few sentences) what can be deduced from your measurements and include a restatement of the experiment's objective.

G) Questions (5 pts.)

Answer questions (use complete sentences) and/or present appropriate calculations.

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Grading

Your **course grade** will be based on the average score of all 6 experiments. Each experiment will carry equal weight.

Your grade for all experiments will be based 40% on the lab work and 60% on the lab report.

Grades from all lab sections taught by the same instructor will be “**normalized**” to ‘**85 per cent**’ at the end of the semester. The following table will be used to obtain **approximate** course letter grades from the normalized scores.

<u>percent</u>	<u>grade</u>
94 or higher	= A
91-93	= A–
88-90	= B+
83-87	= B
80-82	= B–
77-79	= C+
72-76	= C
68-71	= C–
60-67	= D
less than 60	= F

Late reports must be placed in the box outside of **Olney 113**. They will be date-stamped at **5:00 p.m.** of the day received. Your instructor may assign a penalty of up to **10 % per day** for late reports. The minimum experiment grade, however, will be **40 %** if you have completed the experiment obtaining satisfactory data, and you have turned in a data sheet signed by your instructor.