# COURSE POLICY

(Please fill in the information immediately below and keep these pages for reference.)

<table>
<thead>
<tr>
<th>Course Section Info.</th>
<th>Section number _______ / meeting time _________________</th>
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<tbody>
<tr>
<td>Lab Instructor</td>
<td>________________________________________________________</td>
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<tr>
<td>Office/Email</td>
<td>________________________________________________________</td>
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<tr>
<td>Faculty Supervisor</td>
<td>________________________________________________________</td>
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<tr>
<td>Office/Email</td>
<td>________________________________________________________</td>
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Corequisite Course: 95.245 Physical Properties of Matter

Lab Coordinator: Dr. Mittler (Olney 137, tel. 978.934.3775, email Arthur_Mittler@uml.edu)

Required Materials:
- a) laboratory manual – *PHYSICS Laboratory Experiments, revised 8th 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)

Room: See posted notices on lab doors (Olney 103 - 110) and on website listed below.

Attendance: Required for all six lab sessions.

Absences: There will be NO MAKEUPS due to the restrictions of the academic calendar.

Restrictions: No consumption of any FOOD or DRINKS is allowed in the laboratories.

Assistance: Please contact your laboratory section instructor for assistance in the course.

Information: Notices concerning the physics service laboratory courses will be posted in the display cases opposite Olney 111 and on the lab room doors.

Schedules: [http://faculty.uml.edu/Arthur_Mittler/](http://faculty.uml.edu/Arthur_Mittler/)
Rooms: [http://faculty.uml.edu/Arthur_Mittler/](http://faculty.uml.edu/Arthur_Mittler/) (click on Announcements)

**Academic Conduct**

You are responsible for appropriate academic conduct. Please refer to the university's academic integrity policy at:

COURSE REQUIREMENTS

Pre-lab Assignment

Your instructor will give you a pre-lab assignment for experiments 2-6. This will consist of either an assignment to be completed before coming to laboratory or a pre-lab quiz on the experiment to be performed (given at the beginning of the lab session).

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 observations 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.

Lab Report

Formal reports are required for all your experiments and they represent an important part of the course. The report must be prepared using a word processor and printed on standard 8 1/2 x 11-inch paper. It should be a stand-alone, self-sufficient document showing evidence of independent thinking and written in your own words. Be sure to check your grammar and punctuation as well as your spelling. Avoid ambiguous statements, vague statements, and incomplete sentences. Read your sentences over to ensure that they make proper sense.

A) Cover Page This page must contain only the following information:
Your Name
Course Number and Section Number
Instructor’s Name
Title of Experiment
Date Experiment was Performed
Partner’s Name
Objective(s) of Experiment (one or two sentences explaining the primary goal(s) of the experiment)

B) Introduction You are not required to write an original introduction for the experiment. You are expected, however, to list all the equations used in the analysis in this section of the report. Each equation should have a brief description with clear definitions of all the variables.

C) Apparatus and Procedure Include a block diagram of the experiment followed by a complete list of the equipment used. If you followed the procedure given in the lab manual, state that. If not, describe what you did differently and why.
D) **Results and Analysis** Include in this section all data tables, graphs, and sample calculations. Briefly describe how you obtained your results. Results must be reported with units and uncertainties. Include all the analysis described in the lab manual plus any additional analysis that you are able to determine from your results. Your analysis should refer to the diagrams, data tables, and graphs that represent your data and results. All graphs must have a title and the axes must be properly labelled with their units. Graphs and figures should be numbered and have a title and caption. Data tables should also be numbered and properly titled, with each column having a heading label with units.

E) **Discussion** This section should contain a discussion of your results in terms of the experiment’s objectives, a discussion of the estimated experimental uncertainties, and the answers to any questions given in the manual. Label answers to the questions.

F) **Conclusions** The final section of your report should summarize in one or two sentences your conclusions drawn from the investigation, including the final result itself and comparison with other data.

All sections (A-F) listed above must be stapled together to form the lab report.

All reports are due at the beginning of the next meeting of your section that immediately follows the one in which the experiment was performed. Your lab instructor will give you information on details of handing in the last experiment.

**GRADING**

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

Your grade for Exp. #1 will be based 40% on the lab work and 60% on the lab report.

Your grade for Exp. # 2-6 will be based 10% on the pre-lab assignment, 30% 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.

<table>
<thead>
<tr>
<th>percent</th>
<th>grade</th>
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<tbody>
<tr>
<td>94 or higher</td>
<td>A</td>
</tr>
<tr>
<td>91-93</td>
<td>A–</td>
</tr>
<tr>
<td>88-90</td>
<td>B+</td>
</tr>
<tr>
<td>83-87</td>
<td>B</td>
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<tr>
<td>80-82</td>
<td>B–</td>
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<tr>
<td>77-79</td>
<td>C+</td>
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<tr>
<td>72-76</td>
<td>C</td>
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<tr>
<td>68-71</td>
<td>C–</td>
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<tr>
<td>60-67</td>
<td>D</td>
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<tr>
<td>less than 60</td>
<td>F</td>
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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.