

PHYS 102/103 Laboratory
Syllabus- Fall 2019

Location: Trexler 274

Instructor: Dr. Hiba Assi

Office Hours: MWF 13:00-14:30

Open-door visits and appointments are welcome

Time: TH 08:30 – 11:30

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Office: Trexler 264B

Phone: (540) 375-2570

Required Materials: Pre-lab materials are available online through Inquire and should be printed and completed before coming to lab. Lab handouts will be posted on Inquire, and you are required to print and bring the handout to lab. A bound lab notebook (sewn pages, not spiral bound) with graph paper pages is needed, as well as a scientific calculator that is not a cellphone.

Goals: The following five goals will serve as the framework for the activities within the Lab: the Art of Experimentation, Experimental & Analytical Skills, Conceptual Learning, Communication, and Collaborative Learning Skills. New experimental techniques and analytical tools will be introduced. Hopefully the laboratory experiments will clarify and expand concepts introduced in lecture, while practicing report writing and improving your ability to clearly communicate accurate results.

Learning Outcomes: Upon successful completion of the course, students will be able to:

- Conduct scientific experiments and obtain accurate data.
- Discuss the results of an experiment quantitatively and qualitatively.
- Identify sources of error that appear in experimental methods.
- Communicate experimental results in a coherent, well-organized, written manner.

Attendance Policy/Make-up Labs: Since 25% of your PHYS 102/103 grade depends on the laboratory, you must enroll in both the lecture and laboratory sections of 102/103, and all experiments must be completed by the end of the semester or your lecture final grade will be reduced a letter grade.

Furthermore, you may only attend the lab section for which you are registered, unless you have explicit permission before the earlier lab section. Switching lab sessions is allowed only once per semester. The lab starting and ending times are firm, although it may be possible to complete the lab before the published ending time. One missed lab may be completed during the make-up week at the end of the semester, and the report from that make-up lab is due within five days of the completed experiment.

Five percent of your laboratory grade is determined by attendance and participation, as an average of the weekly grades, based upon a ten point scale. It is expected that each student attends the lab, willing to assist with all parts of the experiment and with all of the needed materials. Reductions up to five points for each of the following may be given: failure to be on time, not actively participating

in data collection and analysis, forgetting your lab notebook and calculator, failure to complete the experiment by the allotted time, and attention to your cell phone instead of the experiment.

Pre-lab Assignments: The purpose of the pre-lab assignment is to introduce the material that will be investigated during the lab, therefore pre-lab assignments are due at the beginning of the lab session. Prelab assignments are posted on Inquire for each of the experiments. The assignment is to be printed and completed, or the answers written on a sheet of paper, and then submitted at the beginning of lab. Some of the prelab assignments contain simulations, so it is suggested that access to the simulation be tested before lab is scheduled to meet. The answers will be discussed at the beginning of the lab session, so it must be received before that discussion begins in order to be worth ten points. No prelab assignments will be accepted after the beginning of lab, and a grade of zero will be recorded for not submitting the assignment on time.

Lab Notebooks: Each student is to purchase and bring a bound notebook with graph paper pages to lab each week. A well-organized notebook is easily detectable at a glance, so pay close attention to formatting procedures stated during the first experiment of the semester. The goal of the lab notebook is to practice recording data and results in a well-organized and legible format.

Each student will have their notebook checked before leaving lab and will be graded on a 20 point scale. In order to receive the full 20 points, the notebook data entries must be formatted correctly. If a student forgot their lab notebook or the ending time of the lab was reached without completion of all lab work and analysis, then the work graded will be worth up to ten points. If the student can complete the notebook with all necessary work by the next lab session, the instructor will check the notebook and award the remaining ten points for the previously conducted lab.

Lab Reports: Since one of the course objectives is to communicate experimental results in a coherent, well-organized, written manner, it is important to practice writing lab reports. Most physics lab reports consist of three sections: Abstract, Data and Results, and Discussion. This course will emphasize the Abstract and Data and Results sections.

Most reports will be individually submitted, and a separate document will describe the format and content of the abstract and data and results sections. A few of the reports will be submitted at the end of the lab session, while other reports will be submitted through Inquire and will be due at 11:59 pm on Tuesday of the following week.

Reports will be divided into two types: A and B. The A-type report is one that requires little individual thought. This report may involve writing a group report, submitting group data, following a tutorial for creating a particular graph or table, or writing an analysis in lab on the meaning of a data set. The A-type report may be completed in lab, or submitted through Turnitin. All group reports will be A-type reports, and will be written outside of class and then submitted by one member through Turnitin. B-type reports require more thought and analysis than A-type reports, and will be weighed higher than the A-type reports. Individually written abstracts or individually completed Data and Results sections are examples of B-type reports. All of these reports will be created outside of class and submitted through Turnitin.

All individually submitted reports must be your own work. If the submission is a graph that was originally created during lab, it still must be recreated by you for the report, and not simply copied and pasted from the original person who graphed the results. The time stamp placed on the uploaded document by the server will determine when the work was submitted. ***Unless an extension is granted beforehand***, all late items will be reduced by 10% for each 24 hour period beyond the due date/time. Hence, no assignment will be accepted if more than two weeks late.

Every report submission is worth 50 points. The lowest A lab report grade and the lowest B lab report grade will be dropped at the end of the semester.

Grading: All grades will be recorded on Inquire. Do not discard any graded work until the end of the semester. If there is a discrepancy between the grade recorded on Inquire and on the report, proof of the grade must be produced in order for the grade on Inquire to be changed.

At the end of the semester, your overall lab average will be sent to your lecture instructor. No curves will be applied to your lab grade. The final lab grade will be calculated according to the following distribution:

Attendance/Participation	5%
Pre-labs	10%
Lab notebook	15%
Weekly lab sections	
A-type reports	25%
B-type reports	45%

Use of Electronic Devices: Computers in the lab are networked and you are required to log into them with your username and password. Do not save any work to the lab computers unless you save it to your Z-drive or onto a personal USB device; all other drives are purged when you log out. During class, computers in the room are to be used only for the completion of assignments directly associated with this course. You are allowed to use personal laptops and tablets, but only for the purpose of taking notes.

Out of courtesy to others, your phones must be on silent mode and out of reach during class. If you are continually checking your phone for messages, the instructor may assign a 5 out of 10 participation grade for that lab. If you are engaged with your cell phone, then you are not engaged with your lab partners and the experiment.

Disability Support: Accessible Education Services (AES) is located in the Goode-Pasfield Center for Learning and Teaching in Fintel Library. AES provides reasonable accommodations to students with documented disabilities. To register for services, students must self-identify to AES, complete the registration process, and provide current documentation of a disability along with recommendations from the qualified specialist. Please contact Laura Leonard, Assistant Director of Academic Services for Accessible Education, at 540-375-2247 or by e-mail at aes@roanoke.edu to schedule an appointment. If you have registered with AES in the past and would like to receive

academic accommodations for this semester, please contact Laura Leonard at your earliest convenience to schedule an appointment.

Academic Integrity: The Academic Integrity (AI) policy at Roanoke College will be thoroughly followed in this course, and I expect you to abide by all the outlined rules to avoid any questionable conduct. Although students working within the same group will have the same data, recording of the data into the lab notebook is to be completed individually. Group members may share Excel graphs created during lab time in order to be secured in each student's lab notebook. Error values are to be calculated individually in lab notebooks, as well as sample calculations using the data. Results should be recorded in each student's notebook.

Individual lab reports must be each student's original work, except for shared data. The student submitting the report must recreate all graphs and tables. All reports electronically submitted will come through Turnitin and not through email.

Class Environment: Each member of this class is valued, and is expected to 1) treat everyone else with respect, 2) contribute to a welcoming and inclusive environment, 3) equally contribute to the work during lab sessions and in group reports.

PHYS 102/103 Laboratory- Fall 2019- Tentative Schedule

Date	Lab Topic	Report
September 5	Course Policies Experiment 1: Graphical Analysis	A: Group Abstract
September 12	Experiment 2: Kinematics in One Dimension	B: Individual Abstract
September 19	Experiment 3: Projectile Motion	B: Individual Abstract
September 26	Experiment 4: Force and Equilibrium	A: Individual Report
October 3	Experiment 5: Conservation of Energy	B: Individual Abstract
October 10	Experiment 6: Linear Momentum and Collisions	A: Group Report
October 17	Fall Break- No Lab!	
October 24	Experiment 7: Rotational Kinematics	A: Group Data and Results
October 31	Experiment 8: Torque	B: Individual Data and Results
November 7	Experiment 9: Waves	B: Individual Data and Results
November 14	Experiment 10: Buoyant Force & Archimedes' Principle	B: Individual Abstract B: Data and Results
November 21	Experiment 11: Calorimetry	A: Individual Report

November 28	Thanksgiving Break- No Lab!	
December 5	Make-up Week	Assigned Report due within 5 days of completed lab