

Department of Physics

Duquesne University

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Office Hours:

Mon., Wed. 10:00 – 12:00

Class Schedule

Location:

Fisher 212

Section 1 – Mon. 8:00 – 9:50

Section 2 – Wed. 8:00 – 9:50

Section 3 – Wed. 1:00 – 2:50

Section 4 – Thu. 10:50 – 12:40

Texts

Scientific Lab Notebook (Available in the Bookstore) ISBN 978-1-930882-84-3

If you want to read ahead, a previous version of the labs for the semester are at this [link](#).**Note:** Each week I provide printed copies for each lab which may differ slightly from the ones in the link. You do not have to print out the labs for yourself.**Course Description**

Experiments demonstrating principles and applications of Newtonian mechanics, including kinematics, friction, force, energy, momentum, torque and simple harmonic motion. Students learn measurement practices, digital data analysis and error analysis. Two hours. Co-requisite: PHYS 211. Fall and summer. Laboratory.

Course Web Site

The Duquesne Blackboard site is used for keeping grades and documents. This syllabus is posted there.

Student Learning Outcomes

By the end of the course, a successful student will be able to:

- qualitatively and quantitatively use a constant acceleration model of kinematics to design and carry out experiments,
- qualitatively and quantitatively use a Newtonian force model of dynamics to design and carry out experiments,
- use additional models as covered. Possibilities include rotational motion and oscillator models,
- analyze an experiment using uncertainty in measurement to make a conclusion, and
- effectively communicate about a lab experiment by writing a lab report.

Assessment of Learning

There will be several requirements for the lab course including a lab notebook, two formal lab reports, and a lab skills practicum exam at the end of the course.

Attendance Policy

Attendance is mandatory at all labs. If a lab must be missed, please inform the instructor before the lab begins. If you miss a lab, you will have to rely on your partner's notes to fill in what you missed. You are still responsible for the concepts and skills covered in the lab. Near the end of the semester, one make up lab will be offered. If you miss a lab, the make up lab will be counted for a missing lab. If you miss a lab which has a lab report, you will write up a lab report on the make up lab.

Missing more than three labs (not including the make-up lab) will result in failure of the course.

Lab Notebook Entries

In this course you will use a carbon-copy lab notebook. You will staple and hand in the carbon copies as you leave the lab. The entries for the lab will be commented on and graded by the instructor. An important part of scientific lab culture is being able to reconstruct exactly what you did and how you did it.

The *Lab Notebook Handout* will give you details on what is expected for your Lab Notebook.

Lab Reports

You will prepare one or two formal lab reports during the semester. The *Lab Report Handout* will give you details on how to write it. **You must include the checklist with your lab report!**

Practicum Exam

At the end of the semester there will be a practicum exam. It will involve doing practical lab skills.

Grade Breakdown

The following table lists the points per graded item and the approximate number of items and points in the course. Note that the actual number of items may vary slightly from this list.

Item	# of Items	Points/Item	Points	Percentage
Lab Notebook Entries	11	20	220	56.41
Lab Reports	2	60	120	30.77
Practicum Exam	1	50	50	12.82
Total			390	100

Grading Scale

The grading scale is based on the percentage of possible points earned. The following scale is used:

A-: 90 – 92	A: 93+	
B-: 80 – 82	B: 83 – 86	B+: 87 – 89
	C: 70 – 76	C+: 77 – 79
	D: 60 – 69	
	F: < 60	

All grades will be recorded in Blackboard.

Behavior Guidelines

- **Late arrival & early departure.** Please come to lab on time and do not leave early. The lab is only two hours long, so it starts promptly. Late arrivals or early departures will result in points lost from your weekly Lab Notebook score.
- **Respect your classmates.** Everyone attending class has the right to expect the best possible learning conditions. Please stay on your lab tasks and avoid disruptive behavior. Web searches will be encourage to support lab activities, but please avoid non-course related browsing. The same with texting and messaging. Before checking or answering a text or message ask yourself if it will be distracting to your lab partner or the class.
- **Do not eat in the lab.** You may drink a beverage from a spill-proof container.

Academic Honesty

Integrity is an important part of the scientific process and is required by school policy. Violations will be handled according to the Bayer School Policy. It can be found at:

<http://www.duq.edu/academics/schools/natural-and-environmental-sciences/academic-integrity-policy>

Information for Students with Disabilities

Duquesne University is committed to providing all students with equal access to learning. In order to receive reasonable accommodations in their courses, students who have a disability of any kind must register with the Office of Freshman Development and Special Student Services in 309 Duquesne Union (412-396-6657). Once a disability is officially documented, the office of Special Student Services will meet with you to determine what accommodations are necessary. With your permission, your instructors will receive letters outlining the reasonable accommodations they are required to make. Once I have received this letter, you and I should meet to coordinate the way these accommodations will be implemented in this course. For more information, go to www.duq.edu/special-students.

Schedule

Note: The Monday sections do the lab the Wednesday & Thursday sections did the week before!

Dates			Lab
Mon.	Wed.	Thu.	
8/26 No Lab	8/28 ... No Lab	8/29 No Lab	
9/2 Holiday! No Lab	9/4 Lab 1	9/5 Lab1	Lab 1 – Representing Motion
9/9 Lab 1	9/11 Lab 2	9/12 Lab 2	Lab 2 – Applying a Motion Model
9/16 Lab 2	9/18 Lab 3	9/17 Lab 3	Lab 3 – Testing a Motion Model
9/23 Lab 3	9/25 Lab 4	9/26 Lab 4	Lab 4 – Observing Accelerated Motion
9/30 Lab 4	10/2 Lab 5	10/3 Lab 5	Lab 5 – Testing Projectile Motion
10/7 Lab 5	10/9 Lab 6	10/10 Lab 6	Lab 6 – Observing Air Resistance
10/14 Lab 6	10/16 Lab 7	10/17 Lab 7	Lab 7 – Friction
10/21 Lab 7	10/23 Lab 8	10/24 Lab 8	Lab 8 – Buoyancy
10/28 ... Lab 8	10/30 ... Lab 9	10/31 ... Lab 9	Lab 9 – Springs
11/4 Lab 9	11/6 Lab 10	11/7 Lab 10	Lab 10 – Computation 1
11/11 Lab 10	11/13 Lab 11	11/14 Lab 11	Lab 11 – Computation 2
11/18	11/20	11/21	Make-Up Lab

Lab 11	Make up	Make up	Lab 12 – Testing Static Torques
11/25 Holiday!	11/27 Holiday!	11/28 Holiday!	Thanksgiving Holiday
12/2 Make up	12/4 Practicum	12/5 Practicum	Lab Practicum Exam
12/9 Practicum	12/10 - 18 No Labs!		

Rubrics

The weekly lab notes are graded holistically for completeness, content, methodology, and participation. Parts of each lab notes and the formal lab reports will be graded according to the *Rubrics for Scientific Thinking* which are on the course web site.