

PHYS 122 (Introduction to Physics, semester 2)

SYLLABUS

Instructor: Stephen P. Schuh

Office: Wagoner 145A

Office Hours: M --- 1p – 2p
T --- 12p – 2p
W --- 1p – 2p
R --- By Appointment
F --- 1p – 2p

e-Mail: sschuh1@bsu.edu

Text: Although any Textbook will work for this class, most assignments will be taken from the Princeton review AP Prep Guide.

Philosophy:

“Most people study physics to satisfy some school requirement. A small number study physics to learn the tricks of Nature so they may find out how to make things bigger or smaller or faster or stronger or more sensitive. But a few, a very few, study physics because they wonder – not how things work, but why they work. They wonder what is at the bottom of things – the very bottom, if there is a bottom”

-- Louis Carol Epstein

The absolute hardest thing about physics is that people think it's hard. They've been told it is hard by people who thought it was hard... and *they* were told it was hard by people who thought it was hard. This is both sad and unfortunate. Unless you have an unrealistic view of 'easy', you cannot wish for a class, at this level of your schooling, with an easier mathematical requirement. You could also not hope for a class that required less memorization – most people could memorize every formula used in the first semester in under 5 minutes. In fact, each and every person in each and every class that has ever existed has been practicing physics since birth.

So why is it 'hard'?

It is considered 'hard' because it is believed to be so. Students work very, very diligently to find what makes it so difficult, and because they truly believe it exists *somewhere*, they find something – anything – that reinforces this belief.

Physics is *not* difficult. Physics is simply thinking like a child – a child who still asks 'why' and hasn't been told "I don't know" for so long that they have given up asking. Put aside your math and your memory – and convince that child to try one more time. And this time, give that child nearly two decades of experience, knowledge and learning. Sometimes, like a child, you will go astray – but you will find yourself with amazingly little effort in a place you would have otherwise never dreamed possible.

Laptop Policy

1. No game-playing, movie-watching, e-mail, or IM'ing allowed in class -- doing so will result in a recorded absence for that day.
2. Laptops should be brought to class during laboratory sessions, use of computers during lecture periods is forbidden. Any student wishing to use their laptop during lecture periods will require advanced permission from the instructor.

Grades:

Your grades will be based on the following:

Tests (approximately 4-5) 60%

PHYS 122 (Introduction to Physics, semester 2)

Homework	15%
<u>Labs</u>	<u>25%</u>
Total	100%

Each of the five tests will be comprised of both multiple-choice and free-response questions that will examine both learned concepts and problem-solving skills. Calculator use will be allowed on the free-response questions, but *not* on multiple-choice questions. ((It is not necessary to invest in an expensive calculator! A simple calculator that performs square roots and trigonometric functions (\$10) will be more than adequate.))

Homework, interspersed with quizzes, will be assigned throughout the course. Material covered by these assignments/quizzes will be topic specific, whereas test problems may contain material covered by several chapters at once.

Homework is due by midnight of the due-date. No late homework or labs will be accepted.

Scores will be placed on a loose curve when determining grades. There will, however be a ‘straight scale’ safety net regardless of ‘curved’ grade -- you are therefore guaranteed the following minimal grading scale:

90%--100%	A
80%--90%	B
70%--80%	C
Below 70%	(student must retake course)

Attendance and Academic Integrity:

You have made a commitment toward academic achievement by attending the Academy – both attendance and integrity are essential components to that success.

Class attendance is **mandatory**. An unexcused absence on the day of a lab or test will result in an **automatic zero** for that lab or test. *Missing homework, quizzes and/or tests during an excused absence must be made up as soon as possible. It is the student's responsibility to make arrangements with the teacher.*

It is also important that your brain be here as well as your body. Students who fall asleep in class (I'm not *that* boring!) will receive either a ‘tardy’ or an ‘absent’ mark from the instructor, depending on circumstances. Make sure you avoid this by getting enough sleep the night before!

In addition, it is imperative to your continued success that you exhibit academic integrity at all times. This entails:

- 1) never submitting another person's work as your own.
- 2) never engage in “drylabing.” (artificially manufacturing lab data and submitting it as part of a lab report)
- 3) never cheating on quizzes and/or tests.
- 4) following all ethical standards as described in your student handbook.

Homework Assignment Requirements

1. Label the first page with your name, the class, and the specific assignment (e.g. “Homework #1”, or “Kinematics”). Put your name on all subsequent pages. Write on the front side of the paper only and **staple** your pages together (no paperclips).
2. Handwritten assignments must be done in pencil, or blue or black ink. If the problem is prone to multiple mistakes (i.e. the typical physics problem), it is strongly suggested that you **do not erase** them. Strike through the perceived error and continue the problem. Although this may add confusion to grading (being concise and logical will help alleviate this!), it will certainly help the grader understand where your misconceptions are – and thus aid you to improve much more quickly.
3. Writing must be clear and legible so that reader does not have to work to decipher what is written. Give adequate space to clearly show your work. Leave white spaces between problems to clearly separate them.
4. Lay out your work in a clear and organized fashion that can be easily followed. Break your work into logical steps.
5. For problems that require mathematical manipulation, make sure to include appropriate units in both your work and your answer.
6. Homework will be turned in at the beginning of the class on its due-date. Homework that is turned in late (up to 24 hours) will be accepted, but will be scored with a 50% penalty. *Do not abuse this privilege, as it is intended to give you a “way out” in times of overloading by several classes at once.*

PHYS 122 (Introduction to Physics, semester 2)

Laboratory Report Requirements

1. Lab reports may be typed or handwritten, although handwritten reports must be legible!
2. If a particular method is not dictated for a lab, graphs may be done by hand or by computer. Both methods have advantages and disadvantages.... Don't immediately assume that the computer-method is more accurate! (It often isn't!)
3. Reports should include, at least, the following:
 - a. A brief statement on the purpose of the lab: This is meant to be a 'higher purpose,' not a basic synopsis of the procedure. Bad example: "This lab was performed to measure the acceleration due to gravity." Good example: "This lab was performed to instill an understanding of basic lab methods, as well as to practice with mathematical uncertainty and deviation."
 - b. A list of equipment used in the lab: If you do not know the name of a device, ask the instructor.
 - c. A detailed procedure that you could follow five years from now *and get approximately the same results*. If you can follow it five years from now, someone who hasn't performed the experiment already (most readers) could follow it tomorrow.
 - d. Your data (if there is not much data), or a sample set of your data (if there is too much to conveniently add into the body of your report) should be included.
 - e. Your calculations (or a sample calculation of your sample data) should be included to show how you used your data.
 - f. Your results should be clear, concise and listed separately. Uncertainty and deviation must be included if appropriate.
 - g. A discussion of what your results signify. e.g. "Although our results show a reasonable answer, it was much lower than expected,..." etc, etc, etc.
 - h. Error Analysis: This is perhaps the most important part of the lab report. Carefully list what errors occurred in the lab session, both known and unknown. Unknown errors include those that *most likely occurred* to explain the deviated results you experienced. Explain how a person following your procedure (see above) could improve upon your method to achieve better results.
4. **Failure to turn in three (3) laboratory reports will result in an automatic D* in the class, regardless of lecture grade.**
5. If a group performs the lab together, I will expect more from the lab write-up. While only one person will be required to write the report, the other members are required to make up for their part by performing the lion's share of calculations and graphing. Group individuals are to take turns writing reports... DO NOT get into the habit of doing the same 'job' each time. The primary authors name is to be on top of the list of students in the group when turning in the report.
6. Make sure that the name(s) are on subsequent pages, and that all pages are **stapled**.
7. **THIS IS VERY IMPORTANT!!!** You must be prepared to show evidence of your laboratory work if you seek college placement at your future college or university! The CEEB suggests that you maintain a notebook/portfolio of all completed labs. Failure to do this may result in not being accepted for college placement, despite a very high score in this course.

Ball State University aspires to be a university that attracts and retains a diverse faculty, staff, and student body. We are committed to ensuring that all members of the community are welcome, through valuing the various experiences and worldviews represented at Ball State and among those we serve. We promote a culture of respect and civil discourse as expressed in our Beneficence Pledge and through university resources found at <http://cms.bsu.edu/campuslife/multiculturalcenter>

PHYS 122 (Introduction to Physics, semester 2)

Inclusion Policy

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I truly believe in this policy, and endeavor to go above and beyond in our classroom setting. If you see any behavior that goes against the above policy (even if it's mine!), please bring it to my attention (or have someone you trust do so if you are hesitant).

Computer/Tablet/Phone Policy

No game-playing, movie-watching, e-mail, or IM'ing allowed in class -- doing so will result in a recorded absence for that day.

Laptops/iPads, if available, should be brought to class during laboratory sessions. This is so you can record, graph, and analyze your data in real-time, both to save you time AND to catch errors as they happen!

Use of electronic devices during lecture is forbidden without prior agreement with the instructor.

Student Accommodation Policy

Students possessing an educational 504 or IEP should contact the instructor as soon as possible to arrange for any accommodations that may be needed. Likewise, if you feel that you could benefit from an educational 504 or IEP, feel free to contact the instructor to this regard.

Attendance and Academic Integrity Policy

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It is also important that your brain be here as well as your body. Students who fall asleep in class (I'm not *that* boring!) will receive either a 'tardy' or an 'absent' mark from the instructor, depending on circumstances. Make sure you avoid this by getting enough sleep the night before!

Late arrivals after 15 minutes into class-time will result in an absence for that day.

In addition, it is imperative to your continued success that you exhibit academic integrity at all times. This entails:

- never submitting another person's work as your own.
- never engage in "drylabing." (artificially manufacturing lab data and submitting it as part of a lab report)
- never cheating on quizzes and/or tests.
- following all ethical standards as described in your student handbook (see "Academic Dishonesty")

If you feel you have been unfairly accused of failing an academic integrity standard, you have the option and right to appeal to the Indiana Academy Academic Integrity board.

BSU Mask Policy

The Indiana Academy will follow [Ball State University's mask policy](#) (see Section IV). Based on current CDC guidance recommending the wearing of face masks for all people—regardless of vaccination status—in public indoor settings in communities where the rate of coronavirus transmission is high or substantial, all employees, students, and campus visitors are required to wear a mask while inside any University building. This requirement is effective on August 9, 2021. Fully vaccinated people are not required to wear masks outdoors.

Individuals who are not fully vaccinated for COVID-19 are required to wear face masks while inside campus buildings and outside when physical distancing cannot be maintained.

If a student declines to wear a face mask as required, the student will be referred to the Director of Academic Affairs or the Director of Residential Affairs. If the situation occurs in a classroom or other academic setting, it is considered a classroom management issue, and the teacher will remind the student of the requirement and give the student a chance to comply with it prior to referring the matter to the Director of Academic Affairs or the Director of Residential Affairs. Wearing masks is crucial to preventing the spread of COVID-19 to others.

PHYS 122 (Introduction to Physics, semester 2)

In case of extreme COVID-19, break glass for online policy

As it is possible that we may have to re-face pandemic conditions this year, there may be periods when some (or all) of us return to masks and/or are moved to online learning due to necessity or mandate. All of the below rules apply during e-learning, but some information may be useful:

Zoom Link: <https://bsu.zoom.us/j/9429392891>, if a password is required, please use APIAND2

Lectures: Classes will be provided on Canvas with the same frequency and schedule of the normal school year. It is your responsibility to view these videos w/o 24hours of their posting. It is vitally important to watch them *in order*.

Homework: Homework can easily be scanned or photographed and emailed to me on the due-date required.

Laboratory: Labs will be designed to be done either in a discussion format on Zoom, or with common equipment found in standard homes. Any documentation (journals, reports, etc) expected can be returned to me using the same procedure as HW.

Testing: Tests will be “given” and “collected” at very specific times (TBA). Future circumstances may require different methods, but currently the procedure is as follows:

- The test will be released on Canvas at a very specific day/time that will be announced several days in advance.
- You will have a set amount of time to complete your exam (will be announced on test day, and is tied to the length of that particular test).
- Returning your test to me will be as simple as scanning or photographing your exam and emailing it back to me before the given time has expired. 504/IEP accommodations (see below) will be honored.